THE AUTOMOBILE

Good Roads Tour Reaches New York

GAYLY decked with flags and streamers of all colors and bearing numerous evidences of their unusually hard experience on the long trip from Atlanta, sixty-five of the seventy-three original starters in the National Good Roads Tour, held under the auspices of the New York *Herald* and Atlanta *Journal*, swung past the reviewing car in front of the *Herald* building, Monday night, and were formally dismissed after being checked.

Many occupants of the cars still wore their travel-stained clothing, but a number had taken advantage of the stops along the way to refresh their appearance, especially the ladies, and at the finish of the long run they looked as if they had only motored from the City Hall. But the cars seemed like veterans just in from a hard campaign. Their official numbers and banners were awry and in other ways they showed the effects of their experience up in the mountains.

A STOP AS THE AUTOMOBILES ROUNDED A CURVE APPROACHING CHARLOTTE

Tourists Coming Into Winston-Salem

Natives View the Start from Spartansburg

But their motors were running smoothly and true and so far as their efficiency was concerned a large majority of the machines seemed perfectly capable of duplicating the trip without re-tuning.

Sixty-five of the original starters trundled past the finishing mark while eight cripples were left at various points en route, forced to yield to the exigencies of Jupiter Pluvius and accidents of the road.

The effect of such a tour cannot help but be an aid to good roadmaking throughout the country and especially in the sections traversed by the route of the tour.

The purpose of the enterprise was to foster and crystallize sentiment for good roads, the importance of which is universally recognized, and it is believed that the New York *Herald* and Atlanta *Journal* are combined in a fine effort.

The reception of the tourists at New York was conducted upon elaborate lines. The final day's run from Philadelphia was accomplished over excellent roads, the quality of which is reflected in the fact that 48 of the contesting cars had perfect road scores for that section of the trip.

The head of the column reached Perth Amboy ready to cross to Staten Island before noon, and the Richmond County Automobile Club was summoned in a hurry to act as escorts. It had not been thought that the tourists would arrive in this vicinity until later in the day, and the early appearance of the cars caused a lively scurrying among the club members.

The classification, running time and penalties follow:

CLASSIFICATION OF AUTOMOBILES WHICH WERE ENTERED

Class 1—Nos 20, 23, 31, 33 and 37.
Class 2—Nos. 7, 19, 22, 41, 43, 64 and 67.
Class 3—Nos. 8, 9, 10, 12, 14, 24, 50, 51, 53, 57 and 59.
Class 4—Nos. 16, 17, 28, 42, 44, 47, 48, 52, 55, 62 and 65.
Class 5—Nos. 2, 5, 15, 21, 25, 34, 35, 36, 39, 40, 46, 49, 56 and 69.
Class 6—Nos. 11, 13, 29, 38, 58 and 61.
Class 7—Nos. 1, 3, 4, 6, 30, 32, 45 and 63.
Non-Starters—Nos. 18, 26, 27, 54, 60, 66 and 68.

RUNNING TIME OF THE VARIOUS CLASSES OF CARS

June 6, 7 and 8—Classes 4, 5, 6 and 7, 9:00; classes 2 and 3, 9:54; class 1, 10:48.
June 9—Classes 4, 5, 6 and 7, 10:00; classes 2 and 3, 11:00; class 1, 12:00.
June 10—Classes 4, 5, 6 and 7, 11:00; classes 2 and 3, 12:06; class 1, 13:12.
June 11—Classes 4, 5, 6 and 7, 8:00; classes 2 and 3, 8:48; class 1, 9:36.
June 13—Classes 4, 5, 6 and 7, 4:30; classes 2, and 3, 4:57, class 1, 5:24.

Roads Were None Too Good En Route to Charlotte

PENALTIES AS AWARDED FOR EACH DAY

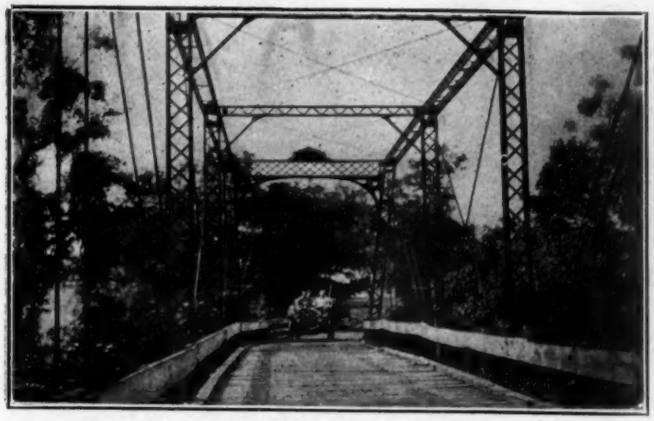
June 6—No. 21, 50 points; No. 25, 43 points; No. 42, 77 points; No. 55, 12 points; No. 65, 77 points; No. 67, 193 points; No. 47, 304 points; No. 44, 688 points.

June 7—No. 21, 17 points; No. 29, 48 points; No. 39, 17 points; No. 43, 164 points; No. 48, 105 points; No. 55, 48 points; No. 69, 20 points; No. 44, 267 points; No. 55, 333 points.

June 8—No. 44, 2 points; No. 48, 175 points.

Pacemaker Calls Halt to Parade Into Spartansburg

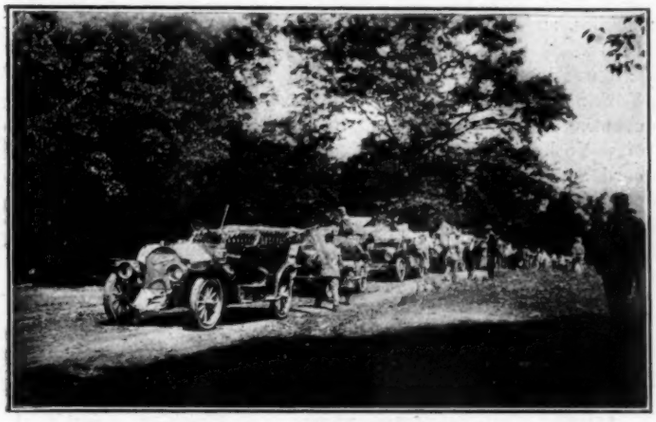
Tourists Lined Up at Charlotte



Pacemaker Crossing Bridge Out of Charlotte, N. C.

Regal Checking In at Gettysburg

June 9—No. 2, 83 points; No. 3, 160 points; No. 4, 50 points; No. 11, 107 points; No. 12, 92 points; No. 14, 253 points; No. 15, 73 points; No. 16, 149 points; No. 17, 63 points; No. 20, 5 points; No. 22, 145 points; No. 24, 201 points; No. 25, 312 points; No. 31, 146 points; No. 34, 171 points; No. 35, 134 points; No. 36, 89 points; No. 38, 104 points, No. 40, 68 points; No. 45, 133 points; No. 46, 115 points; No. 48, 524 points; No. 52, 181 points; No. 56, 16 points; No. 58, 278 points; No. 61, 100 points; No. 62, 169 points; No. 65, 265 points.



A Noonday Halt Between Towns

The penalties as here given for June 9th have an allowance coming to them of 41 points, due to the fact that the judges were unable to get through on time, although it is true that they transferred their flag to 4 or 5 cars each time that they were stalled, and the difference in time, due to the delay, makes the 41 points which are to be subtracted from the points given.

The cars which came through on time, and have a clean score for June 9 are as follows: Nos. 13, 19, 30, 49, 53 and 57.

June 10—The cars which started and went through with a clean score for this date were Nos. 11, 13, 14, 15, 16, 17, 22, 25, 30, 34, 35, 38, 56, 62, 2, 3, 4, 6, 19, 20, 45, 46, 49, 53, 57, 61 and 65.

June 11—The cars which started and went through with a clean score were Nos. 2, 3, 4, 5, 8, 11, 13, 14, 15, 16, 17, 19, 22, 25, 27, 28, 29, 30, 31, 34, 35, 36, 38, 40, 45, 46, 49, 53, 56, 57, 61, 62, 63, 65, 24 and 28.

June 13—Points against cars which did not have clean scores were No. 21, Pope-Hartford, 32; No. 39, Selden, 74; No. 50, Cole, 1; No. 52, Oakland, 27; No. 69, Columbia, 12.

CARS WHICH WERE ACTUALLY IN THE BIG RUN

No.	Car.	No.	Car.
1	Packard	34	Corbin
2	National	35	Stevens-Duryea
3	Thomas	36	Halladay
4	Packard	37	Brush
5	Knox	38	Winton Six
6	Pope-Toledo	39	Selden
7	Lambert	40	Speedwell
8	Regal	41	Ford
9	Lambert	42	Jackson
10	White Star	43	Maxwell
11	American Traveler	44	Velie
12	Maxwell	45	Thomas
13	Pope-Hartford	46	Mercer
14	Maxwell	47	Pullman
15	Columbia	48	Ohio
16	Buick	49	Pullman
17	Chalmers-Detroit	50	Cole "30"
19	Ford	51	Reo
20	Hupmobile	52	Oakland
21	Pope-Hartford	53	Cadillac
22	Hudson	55	Ohio
23	Brush	46	Columbia
24	Kissel-Kar	57	Mitchell
25	Speedwell	58	Palmer-Singer
27	Thomas	59	E-M-F
28	Firestone-Columbus	61	White Gasoline
29	Stoddard-Dayton	62	Cadillac
30	Lozier	64	Buick
31	Maxwell	65	Maxwell
32	Locomobile	67	Maxwell
33	Hupmobile	69	Columbia

The Hudson, No. 22, Waiting for the Word

Checking Out at Martinsville

CHICAGO TROPHY TO BE WON BY THE BEST CAR IN THE RUNABOUT CLASS

CINCINNATI, O., June 15—Starting from here on June 14 and finishing at Chicago, Ill., on June 30, the Seventh Annual Reliability Tour Contest under the auspices of the A. A. A., for the Charles J. Glidden Trophy for touring cars, and the Chicago Trophy for runabouts and miniature tonneaus, with 38 cars in line, represented for the most part 1910 offerings, divided into 26 contestants and 12 automobiles marked "Official." Of the contestants there are 14 strugglers for the coveted Glidden Cup and 12 debaters for the Chicago Trophy. The names of the contesting cars in the respective divisions are as follows:

Automobiles Entered in the Chicago Trophy Class

No. 100, Moline; No. 101, Moline; No. 102, Moline; No. 103, Lexington; No. 104, Cole; No. 105, Parry; No. 106, Falcar; No. 107, Maxwell; No. 108, Cartercar; No. 109, Cartercar; No. 110, Lexington; No. 111, Westcott.

Automobiles Entered in the Glidden Trophy Class

No. 1, Premier; No. 2, Premier; No. 3, Premier; No. 4, Chalmers; No. 5, Chalmers; No. 6, Cole; No. 7, Maxwell; No. 8, Cartercar; No. 9, Parry; No. 10, Glide; No. 11, Ohio; No. 12, Ohio; No. 14, Fennsylvania; No. 15, Cino.

Details Observed When the Cars Were Being Inspected

In general, the models entered for both trophies carry the vintage of 1910, and are of the same type as seen on the streets in the different cities every day. The three Moline entries for the Chicago trophy class are 1911 models, differing from Moline 1910 cars in that the stroke of the piston is longer than formerly, the cylinder sizes being 4 inches bore and 6 inches stroke. As a further advance over last year, the chassis frame is of the drop type. There are only two 6-cylinder cars in the contest, a Premier and a Pennsylvania, both Glidden contesters. All of the automobiles entered in the Chicago Trophy class are of the 4-cylinder type, excepting a 2-cylinder Cartercar, and it is worthy of particular note that this is the first time that a friction drive has competed for Glidden honors. All three Cartercars are fitted with the usual friction gearset which is so well known in the cars of this make.

Ignition is by magneto in every automobile entered for both prizes excepting for the 2-cylinder Cartercars. Among the types of magnetos employed, the Bosch system is on 9 of the contesting cars, 11 are fitted with Splitdorf magnetos, Remy has 2, Eisemann 1, and Kurtz carries 1. From the above it will be observed that this is a magneto year.

The fuel systems employed on the cars include 16 Schebler carbureter outfits on as many of the cars; the Mayer carbureter is on the 3 Chalmers contestants; the Maxwell cars have their own make, and the Stromberg carbureter is on two of the automobiles, and the rear guard is brought up with 1 Miller and 1 Brush.

It was in 1904 that the first annual run was started from New York and Boston and finished at St. Louis, covering 1,318 miles, counting from New York. In 1905 the tour began and ended in New York; its itinerary included Hartford, Bretton Woods, Concord, and Worcester. It was for this run that Charles J. Glidden put up the now famous Glidden Trophy, and it was awarded to Percy P. Pierce, driving a Pierce car, the distance being 871 miles. In 1906 the tour started at Buffalo, ran east through the principal cities in Central New York, north along the shores of Lake Champlain, and crossed the frontier line into Canada, swerved to the east from Montreal to Quebec, then south into Maine, finishing at Bretton Woods, a distance of 1,135 miles. In this tour, Percy P. Pierce defended his possession of the trophy with a Pierce car. As a second interesting part of the 1906 event, Paul H. Deming, chairman of the Touring Board, put up a trophy which was awarded to C. W. Kelsey driving a Maxwell car. In 1907 the tour started at Cleveland, ran west to Chicago, thence in an easterly direction, crossing the States of Indiana, Ohio, Pennsylvania, and Maryland, passed through Baltimore on its way to Philadelphia, and ended by crossing New Jersey to New York City, covering a distance of 1,570 miles. It was in this year that the deed of the Glidden Trophy was so changed that the award was made to the club whose team fin-

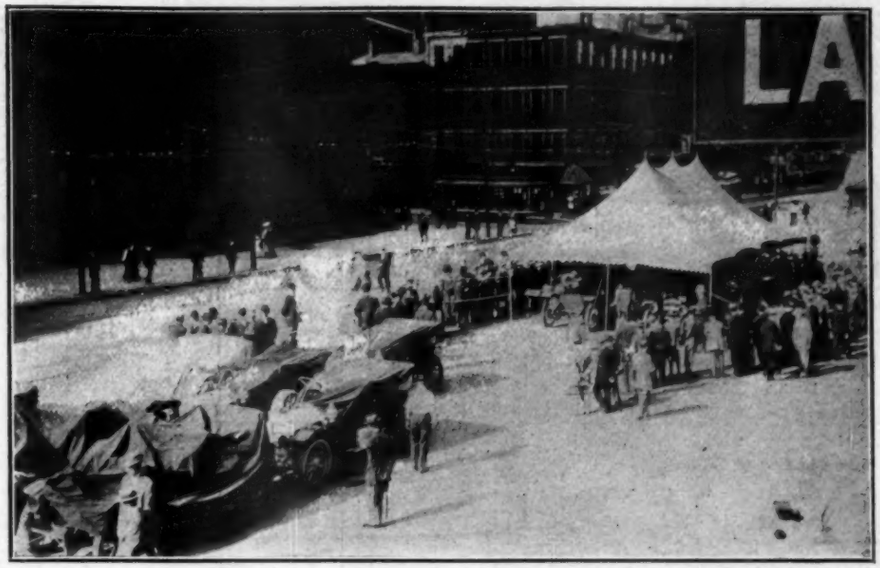
ITINERARY FOR THE 1910 TOURING CONTEST

Starting Dates A.M.	Starting Points	Intermediate Stops	Miles	Finishing Points	Day's Miles
June 14	Cincinnati	Lexington	83.3	Louisville	162.0
June 15	Louisville	Bowl'g Green	130.0	Nashville	193.9
June 16	Nashville	Columbia	41.5	Sheffield	119.7
June 17	Sheffield	Corinth	62.1	Memphis	161.7
June 18	Memphis	Clarendon	112.2	Little Rock	207.7
June 19	Little Rock			Hot Springs	53.3
June 20	Hot Springs	Prescott	84.0	Texarkana	138.3
June 21	Texarkana	Paris	97.2	Dallas	217.1
June 22	Dallas	Terral	130.1	Lawton	200.7
June 23	Lawton	Chickasha	64.6		
		El Reno	112.4	Okla. City	145.3
June 24	Okla. City	Enid	100.1	Wichita	216.0
June 25	Wichita	Emporia	108.8	Kansas City	234.5
June 26	Kansas City				
June 27	Kansas City	Maryville	126.5	Omaha	242.3
June 28	Omaha	Guthrie Cen.	105.3	Des Moines	159.0
June 29	Des Moines	Marengo	96.2	Davenport	219.8
June 30	Davenport	Rochelle	102.8	Chicago	179.7
				Total,	2851.0

16 Running Days—average per day, 178.2 miles

ished with the greatest number of points to its credit. The Automobile Club of Buffalo was represented by 2 Pierce "Great-Arrows," 2 Thomas "Flyers," and 1 Packard.

In 1908 the tour started at Buffalo, ran south to Pittsburg, east to Philadelphia, north to Albany, east to Boston, north to the White Mountains, and south to Saratoga, covering 1,670 miles. The club teams for this year were the Buffalo Automobile Club No. 1, comprising 3 Pierce-Arrow cars, the Columbia Automobile Club team, comprising 3 Peerless cars, and the Chicago Motor Club team made up of 2 Haines cars and 1 Oldsmobile; the result was a tie. An attempt was made to wipe out the tie by running the cars from Saratoga to Syracuse to Buffalo, and then over the original course until all but one team was eliminated. The Buffalo team was at the starting line for the run the morning following the finish at Saratoga, but the other teams failed to show up, and the Buffalonians refused to cross the line. The cup, under the circumstances, could not be awarded, and it remained in the archives of the A. A. A. The 1909 tour started from Detroit, Mich., ran west to Chicago, north to Minneapolis, south to Council Bluffs, west to Denver, crossed Nebraska to Kansas City, covering a distance of 2,637 miles. In the meantime the Glidden Trophy deed of gift was amended so that it might be won by an individual, and it fell to the Pierce-Arrow entrant.



FACING THE TECHNICAL COMMITTEE AT CINCINNATI BEFORE THE START

Various Incidents of the First Day

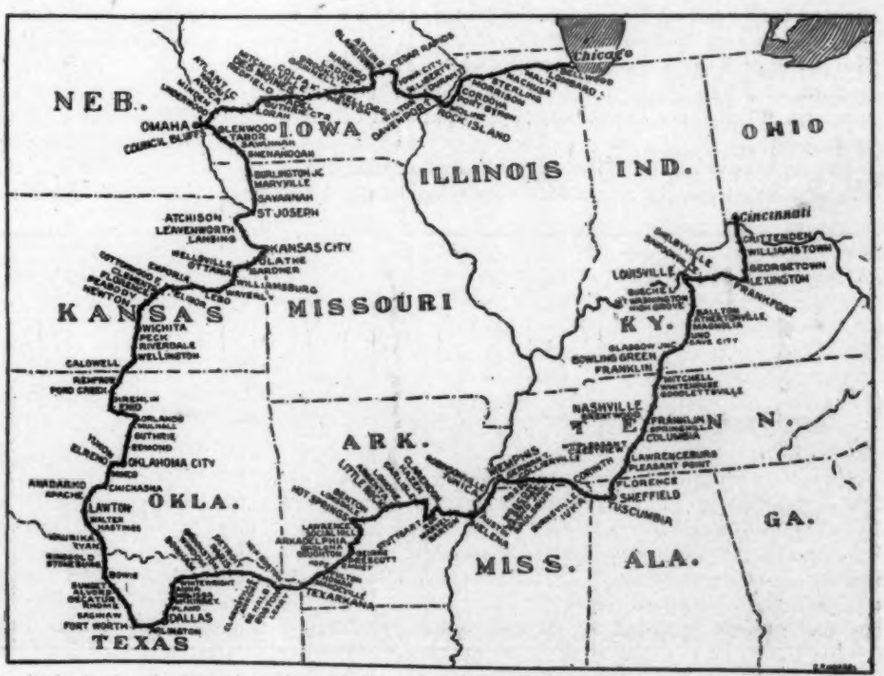
The four cars which lost out in the Glidden class were: No. 4, Chalmers, driven by Matson, by dropping a pin out of the emergency brake rod; No. 6, Cole, was fined 30 points for having to twice clean out the gasoline line to the carbureter; No. 9, Parry, which took on gasoline after leaving Lexington, and No. 14, Ohio, was given 22 points for taking on gasoline outside of a control, repairing water pump, and retiming magneto, which had to be done because a paper pin in the magneto shaft broke.

Those who lost out in the Chicago Trophy ranks were: No. 104, Cole, which, in trying to pass between a Moline car and an approaching horse vehicle, collided with the latter, breaking a wheel, which cost 1,042 points. The wheel was replaced by a new one which was procured from Louisville, and the work was so quickly done that the car covered lost ground and checked in on time; No. 106, Falcar, lost 60 points by having to put on a new magneto, a collar on the original one having slipped, putting the timing out and necessitating the replacement; No. 110, Lexington, lost 4 points for dropping a pin from the brake rod, which was replaced; and No. 111, Westcott, was burdened with 6 points for making two carbureter adjustments.

Interest Runs High Along the Route

It was the privilege of the tourists to admire the Blue Grass country around Lexington, to have a glimpse of the big stock farms with their whitewashed fences, colonial types of houses and to speculate on the witticisms of the local wags who sat on the fences and watched the automobiles go by. The colored folks straggled in from their haunts for quite a distance, and playing a subdued rôle, which is their part in the South, they were picturesque from the point of view of the tourists, which did not prevent them from presenting their own version of the affair.

From the crossing of the bridge to Covington, which took the tourists out of Ohio into Old Kentucky, was but a matter of a few minutes, and a Southern atmosphere surrounded the caravan at once. The roads were extremely good, taking them as a whole; piles of broken stone here and there along the way gave the impression that they were being maintained, and an occasional man engaged in breaking stone lent substance to the conclusion. The prognosticators of the party said that there must be a great many automobiles in Kentucky, and they based their conclusions on the behavior of the horses which were passed as the tour went on; the horses were not afraid of the automobiles, they were used to them.



MAP OF STATES AND PRINCIPAL CITIES THROUGH WHICH THE TOUR GOES

Wonderful View From Skyline Drive Near Canon City, Showing Mountains and Valleys

In Wonder House of Nature

By B. B. MORRIS

CANON CITY, COLO., June 13—Among the wonders of Colorado—that land where wonderful things seem ordinary in comparison with the superlative charms of the real attractions—is the Skyline drive, which threads the summit of the mountains adjacent to this city.

The roadway, smooth as a billiard table and thirty feet wide, is about 800 feet above the level of the bottom of the canon upon which the city stands and 8,000 feet above the level of the ocean.

Through the marvelously dry, clear air of Colorado, that sparkles and stimulates like bubbling wine, the view from the Skyline drive affords a series of pictures, excelled nowhere on earth. From the vantage point of the ridge the sight is unobstructed for miles, and looking out across the gorge the picture of the mountains, with their bases shrouded in purple shadows and their heads standing sharply into the eternal white, is inspiring enough to form the basis of the World's future masterpiece of painting.

One of the magnificent tours available for automobiles is one starting at Denver and passing through Colorado Springs. All the way southward on this leg of the journey, the tourist is in sight of the very backbone of the continent. From the spike-like points of Long's Peak, which lies back of Denver, to the shadows of Pike's Peak, near Colorado Springs, the scenery is gorgeous, although the course lies along as flat a bit of desert as exists outdoors.

Turning westward at Colorado Springs and skirting the foothills of Pike's Peak, the tourist enters the gorge of the Arkansas and the marvels of nature increase apace with each mile traversed. Canon City nestles snugly in a little valley that was hollowed out long before history began and is almost entirely surrounded by walls of porphyry, granite and limestone that tower into the cloudless sky. The Skyline drive was built by the labor of convicts to a large extent and has been carefully constructed in every detail.

At the foot of the precipice, upon which the drive runs, is the Royal Gorge boulevard, another magnificent touring road. An excursion into this part of the country would be incomplete without a trip over both these masterpieces of scenic road-building. The way from Colorado Springs to Canon City is being constructed and the few gaps that now exist will soon be filled with excellently surfaced roads which will take some of the adventure out of the tour, but which will add much to the comfort and equanimity of the traveler. The return to Denver might be the eastern route, via Elizabeth and Parker. The whole trip is slightly less than 300 miles long.

During the recent run of the Santa Fé Trail Association the participants had a glorious experience. Many of the members explored portions of the adjacent mountains where even the hardy cayuses of the prospector might have found trouble in going and all were full of enthusiasm about what they saw and found.

The pictures on this page give some idea of the party making the trip, it being a very large one, of the kinds of roads met, of the scenery which they delighted in, and many other things which would be a great source of pleasure to the Eastern man.

Assemblage of Cars on the Prairie as Used by the Santa Fé Trail Association

Automobile Apparel

Tussah Wrap

Coat of Blanket Cloth

Touring Coat

Dust-proof Hood

White Auto Coat

WITH the touring season rapidly approaching it is not too much to expect that the lady autoist will migrate department storeward in quest of raiment in keeping with prevailing style tendencies, and more nearly in accord with the dictates of road experience, having in mind the fact that the sun does not shine all the time. As an indication of some of the possibilities which should be of more than passing interest to the woman autoist, the reproductions here offered are claimed to be up to the minute.

On short motor drives out to the country club, or other nearby points, a coat of tussah or mohair in white or a creamy tone, with gay linings and turned-over collar and cuffs to match the lining is all that is necessary. The model shown is of biscuit-colored tussah, and completely covers the lingerie frock beneath. The lining and cuff and collar facings are of changeable blue and green taffeta, while the hat is in two shades of blue.

The looser the coat, the smarter the effect it seems. Paul Poiret has produced many of these loose, raglan-like models this season. The feature of the raglan cut is the seamless shoulder, producing a baglike fit over shoulders and arm. This coat may be donned over the daintiest frock without fear of crushing it. It is built of a lightweight, waterproof fabric, woven to withstand dust and rain. The hat, a closely fitting turban of mixed red and white straw, has a trimming of Chantecler pompons.

White coats are vastly becoming and look most fresh and charming against the summer background of trees and lawns. The white coat illustrated is made of English mohair and is a very dainty little model for summer wear about town. The bonnet is a Gage model of cream lace straw with ribbon trimmings in green.

No Parisienne thinks of going to the races without a pretty motor wrap tucked away in the tonneau, to don after sundown when the air grows chill. These big, wool coats are immensely chic, and that shown in the illustration is one of the very smartest of the new models. It is built of light, yet delightfully warm, wood brown blanket stuff, and the model is an entirely new one, with apron panel at the front, strapped collar, and mannish sleeve buttoned together at the wrist.

As a head covering, the hood which is shown here is designed to meet the needs of the fair autoist who has a penchant for roughing it. It is not only rainproof, but affords adequate protection when the wind blows stoutly, likewise it is invincible to dust, so that it presents all the advantages of the protective devices in use among racing drivers. To the woman of snap it offers additional advantages; a deft fold and a fanciful twist will so alter it that it will present any one of a diversity of shapes. This hood, which may be had in many waterproof fabrics, is being brought out by Sands & Maxfield, 86 North Eleventh street, Newark, N. J.

Studies in Aviation Theory and Practice

By MARIUS C. KRARUP

EQUILIBRIUM of the aeroplane is, at the present stage of design, maintained mainly by staying on the ground when the wind blows. The aviator who follows a different policy admittedly takes many chances. Tumbler aeroplanes, in the image of tumbler pigeons, have not yet been produced, and it is not certain, if they were produced, that the power plant and its accessories would continue to function properly in topsy-turvy positions, or that the aviator himself would find it congenial to emulate the loop-the-loop man of the circus. If pure science were able to cope with the problem of equilibrium in a practical manner, a score of European and American scientists would have furnished the solution long ago, but science, though helpful in analyzing the problem, is not often successfully inventive and constructive. The scientific airships have perfect equilibrium, but they don't fly. They are mostly of the helicopter type and designed with the weighty portions suspended so much nearer to the ground than the sustaining planes that a hurricane could not much more than rock the machine around its center of gravity. The practical question relates to aeroplanes, because aeroplanes do fly. With regard to the equilibrium of aeroplanes, science knows that it may be maintained by means of high speed. The consoling word goes out every now and then that the aeroplane propelled at a speed of 100 miles per hour or more will be able to brave gusts of wind with impunity, but aviators willing to try how high speed is required for each of the various sorts of blustering weather are not numerous, partly because no one knows that he can reach the required speed, or pass through the necessary intermediate speeds in safety, and also because nearly every aviator of note has found on one occasion or another that the equilibrium of his machine was not good enough for the weather in which he went up.

While flippancy is in order when it is pretended that an acceptable solution of the problems of equilibrium for aeroplanes has already been reached, the very respectable performances which stand to the credit of various aviators in the way of long-distance flights in weather not absolutely calm do seem to establish equilibrium as an art partially mastered by operators of aeroplanes, while not a property of the machine itself. Prominent aviators hold the opinion that the preservation of equilibrium must forever remain an art, and that unskilful aviators will always run the risk of falling precipitously to the ground. Before attempting to discuss the means for accomplishing equilibrium in higher degree than at present attained, it seems necessary to arrive at a clean-cut understanding on this point. The self-righting lifeboat furnishes perhaps the nearest parallel. Its equilibrium in the troublous waves is not absolute. The art of oarsmen and helmsman assists in maintaining it. Something more would be desirable in an aeroplane. The bird is, perhaps, self-righting so long as its wings are outstretched, its nervous and muscular energy unimpaired. But shot it falls, and falls fast. An automobile is pretty well balanced on the ground, as a rule. Few object to its lack of equilibrium. Yet, it can be upset. The sense of sight in the driver and his ability to steer constitute the safeguards against loss of equilibrium with an automobile.

Approaching the subject through these parallels, it seems clear that the equilibrium to be asked of the aeroplane must be superior to that of the automobile, mostly because the aviator has not the automobile driver's chance to see and estimate in advance the foes of equilibrium which beset his path; also because in his case he can not often steer clear of these foes, as they may overtake him. The aeroplane must be self-righting or easily righted after a serious disturbance of its balance, because serious disturbances are unavoidable in bad weather. But if the aeroplane was so completely self-righting that the aviator could not steer himself to destruction, this would mean, evidently, that he could not steer at all beyond a certain very small angle of deviation from his course in any direction.

The aviator who contends for the "art" of preserving his balance is at least partly right. But can he preserve it with the machines at present at his command? Practice says no; only in fine weather. Theory says no; only in fine weather. This must be made clear. Any disturbance which throws the machine up in front or up in the rear should, according to the art, be corrected by means of the tiltplanes, but if the disturbance exceeds the range of efficient rudder action (which is about 20 degrees on either side of normal, air-cleaving position) while the momentum operates in nearly the old direction (and this is the nature of a disturbance) the value of the tilt-planes for restoring equilibrium is for the moment—a most precious moment—reduced to nil. The art is helpless, unless, as noted below, much reserve power is instantly available. If the machine is carried sideways with a gust, the tilter becomes equally useless. If the lateral equilibrium is disturbed, the effect of ailerons or warping of the planes is reduced instead of strengthened. If all three disturbances take place at once, in the degree mentioned, all three inabilities ensue. Only one factor serves equilibrium in these cases, and that is independent of the aviator, at least so far as its direction is concerned. This is the power. In the aeroplane of to-day, it acts constantly in the same relation to the main planes, and if the propeller thrust is sufficient, the machine will be shot forward, in any position given it by the wind, and the control planes, by virtue of the speed given the machine in the new direction and by the aviator's art, may be used to bring the machine gradually back to equilibrium. But, if the thrust is insufficient to cope with the position of the machine, the chance for escape vanishes.

For example, if the machine is pointed steeply upward, the propeller thrust may be insufficient to maintain the speed required for sustentation, and in that case the tilt-plane control will do no good.

(To be continued.)

Special Motors and Twin Motors

BIPLANES measuring 30 feet span and 5 feet fore-and-aft and giving a supporting area of about 300 square feet, besides the control areas which should not be counted on for support, are readily made within a weight of 450 pounds, exclusive of motor, propeller apparatus, gasoline and aviator. The maximum weight per square foot may, therefore, be estimated at 1 1-2 pounds. As each square foot under operating conditions, say for starts and stops, which represent the most difficult periods in flight, lifts from 2 to 9 pounds, a lift allowance of 3 pounds for each square foot should be admissible. By adding 50 square feet to a biplane's wing area at the rear edge, where the addition does not add materially to the resistance against propulsion, there is thus a net gain of 75 pounds lifting capacity. The designer who contemplates the employment of a motor whose weight has been cut down to 75 pounds, with more or less risk of inferior operation due to this reduction of the motor weights which have been found conducive to reliability in automobile practice, is always confronted with the other alternative of increasing the lifting capacity of his machine instead. And the means at his command to this end are so numerous and so easily applied that

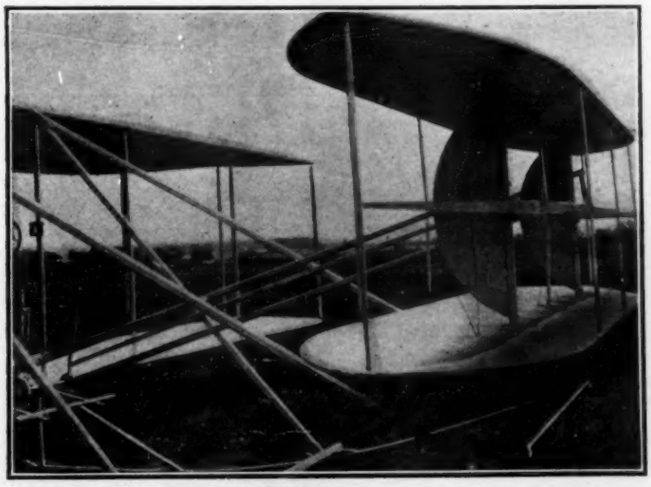
the introduction of uncertainties in the power plant, even to the slightest degree, seems to be purely a relic from that past stage in aeronautics when all efforts were concentrated upon getting lift enough to leave the ground, it being at that time still unknown how easily this could be accomplished. If the designer, for reasons of equilibrium (which is a little intolerant of broad planes) does not wish to gain all the carrying capacity, which he may need for the sake of employing a thoroughly tried motor, by adding area at the rear edge of his planes, he has tilts and curvature of the planes to work with. His plans may contemplate a normal flying or starting tilt of 7 to 10 degrees. By raising this to 10 to 13 degrees, he will gain an additional lifting capacity of at least 1 pound per square foot, and while he will also need a little more power to propel his machine at the higher tilt at any contemplated speed, the net gain, assuming that he will employ the same power as first planned, will amount to at least 1-2 pound per square foot. Owing to the power consumed in the propulsion of those elements of the structure which create resistance to its propulsion without helping to lift, there is a net gain from higher tilt as well as from higher area. There is a similar net gain from higher curvature. If the designer's plans contemplate planes with 1-30 curvature, as is customary, he may add about 2 pounds gross carrying capacity per square foot and probably about 1-2 to 3-4 pound net—power requirements for a given speed considered. If it is supposed that the designer chooses to gain a total of 1 pound additional carrying capacity from all of the three sources at his command, as he may easily do in most instances without going to extremes in any construction features, he will have provided for carrying 300 pounds more of motor weight, and it remains with him and his judgment whether he will place these 300 pounds into one highly reliable motor or will prefer to divide the chance of motor troubles between two independent engines. As no automobile motor has been developed as yet which works dependably at its top rating, including top speed and maximum explosive charges, and especially none whose lubrication and cooling are quite automatic and satisfactory at maximum power development, it seems that for the present the employment of twin motors, whether intended to work simultaneously and synchronized or with one as an auxiliary to be switched into operation when the other gives out, represents that class of expedients which should be restricted to the field of experimentation, preferably for a considerable length of time, in a laboratory on *terra firma*.

As an example of a flying machine in which all the elements which produce carrying capacity have been utilized in high degree, the Demoiselle, designed by Santos Dumont, may be mentioned. With a high tilt, apparently more than 15 to 20 degrees, and a high curvature, varying in the different portions of the planes, it carries a weight of about 660 pounds with a wing surface of only about 108 square feet. The motor has 35 to 50 horsepower. Its tilter plane and steering planes are at the rear. But, by utilizing all the factors mentioned almost to the full, Santos Dumont has gotten into a new difficulty, having left very little range for the action of his control planes. If the machine dips by reason of the action of an irregular gust of wind, there are not sufficient means for compensating this tendency, the means having been exhausted by normally using the high tilts for sustentation which should be used only for control. And this accounts for the relatively poor results achieved with this inexpensive type of flying machine.

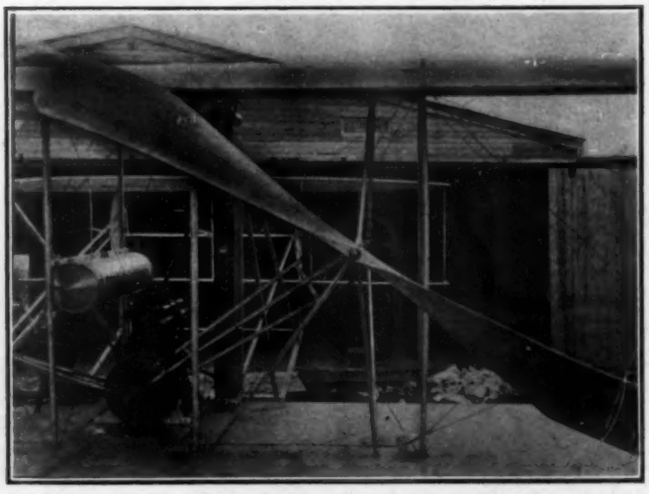
New Wright Machines at Indianapolis

VISITORS at the aviation meet on the Indianapolis Speedway, during the present week, were offered an opportunity to see five Wright biplanes navigating the atmosphere. The Wright company entered this number of machines, it is stated, and they were operated by as many members of the company's team of performing aviators who have been trained by the brothers themselves.

Interesting details of construction of these machines are shown in the accompanying photographs. The view of the tilter planes shows the addition of two small vertical surfaces, which are immobile "stabilizers" not heretofore favored by the Wrights. These surfaces will retard lateral, irregular motions under average weather conditions and will steady the effect of steering control movements, especially for beginners. At the rear of these machines a horizontal plane is added, which serves a similar steadying purpose for up-and-down movements, under average weather conditions, but it is also subject to control in the same manner as the front tilter planes are. This change is the same as was illustrated in these pages last week in a view of the new French-built Wright machines. In the view of the propeller shown herewith it will be noticed that the blade is hollow transversely, as indicated by the white curved line, but this is not a new feature. It dates back to Lilienthal and greatly increases the efficiency, especially at low speed. Another interesting feature is the use of tubes for guiding the chains and permitting the crossing of the chains for one of the propellers.



Small vertical "stabilizers" added to the tilter-plane control in new Wright fliers



Propeller in Wright fliers with transversely curved blades. Tubular chain guides

How to Disregard the Rules of the Road

Presenting four dangerous situations, each of which is in violation of the rules of the road, offering an excellent opportunity to wreck the automobiles, and injure the occupants thereof, especially in mucky weather when the pavement is slippery, and particularly if the drivers ignore Newton's laws.

AUTOMOBILES are sufficiently high-priced to make a dent in the memory of the man who pays for one, provided it is wrecked on the road as the result of a deliberate violation of the rules which are laid down for safe driving. Acting on the theory that information cannot be imparted efficiently by a direct method, it is deemed expedient to show the wrong way, so that the driver who wishes to wreck his automobile will have no difficulty in selecting some one of the situations which will best serve the end sought.

Before discussing the situation in detail, it will be necessary to bring out one or two points in relation to road performance which ought to be well understood, if it is desired to have a first-class wreck. The tractive effort of an automobile depends upon the character of the tires used, their condition, and the weight or, better yet, the distribution of weight, upon the four wheels of the car as a primary consideration. Next, the road condition must be studied. Asphalt pavement, when it is dry, defeats slipping very well indeed; but in a wet condition, especially if the pavement has not been cleaned, the oil-like consistency of the débris will retard to a marked degree any attempt at bringing a speeding car to a state of rest, which condition, in the face of the fact that an automobile cannot be stopped within a certain distance anyway, if it is going at a certain speed, represents all that is necessary if a collision is courted.

Last year an attempt was made to show in a practical way that which was perfectly well understood theoretically, i. e., the distance in which a car may be brought to rest is settled by the speed at which it is going, and not by the struggle of the driver to apply the brakes with greater force, if the exigency is greater. The test was conducted on Long Island under well-defined conditions in the presence of a committee of skilled engineers, and it re-resulted in average results which may be stated as follows:

Distance Required to Arrest Motion of Vehicles

Seven-passenger touring car at 40 miles per hour.....67 feet
Seven-passenger touring car at 20 miles per hour.....16 feet
Two horses and carriage at 25 miles per hour.....64 feet
Motorcycle at 40 miles per hour.....66 feet

After many attempts it was found that horses could not be stopped any quicker than automobiles, and it was also ascertained that motorcycles followed the same law, so that the practical test, which was conducted under a many-angled set of conditions, merely demonstrated that theoretical deductions will serve as a good guide, provided the road condition is properly represented, considering any given automobile, and of course the test served as a further indication of the efficacy of the law of the moving mass, bringing into prominence the limitations of brakes, which under certain conditions, become incapacitated, as when they are applied with too much force, thus causing the wheels to skid, when the braking effect is reduced to a minimum, whereas the driver may labor under the impression that he is accomplishing the maximum.

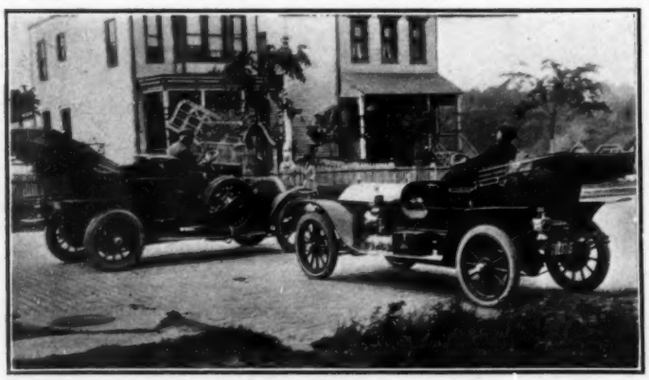


Fig. 1—How to shoot out of a lateral and hit a passing automobile even if it is on its own side of the street

In estimating what will be the performance of an automobile while it is being brought to a standstill, it is necessary to consider the situation from two points of view—(a) if the automobile is traveling in a straight line and (b) if the automobile is going around a curve. The shortest possible distance in which the motion can be arrested will be as fixed in (a); in other words, when the automobile is traveling in a straight line. The conditions (b) will depend upon the radius of the curvature, as well as upon the distribution of weight on the wheels of the automobile, and the adhesion of the tires to the roadbed. On a curve the centrifugal force of the mass must be lower than the force of adhesion of the tires on the road, if skidding is to be avoided. If the driver is particularly anxious to have his automobile skid into the gutter, all he will have to do is to speed up to the point where the centrifugal force of the mass will be greater than the adhesion of the tires to the road. If the radius of the turn is short, and the roadbed is slippery, it will not be necessary for the driver to do much speeding.

Some automobiles perform differently from others, depending upon the distribution of weight upon the four wheels as they contact with the roadbed, and upon the center of gravity of the car as a whole. It is almost unnecessary to furnish a means of predicting just what the speed will have to be to induce skidding on a curve. The average driver seems to be able to accomplish this condition without having to memorize a formula which will offer the facility of forecasting it. At all events, if v represents the speed of the car, in miles per hour and r the radius of the

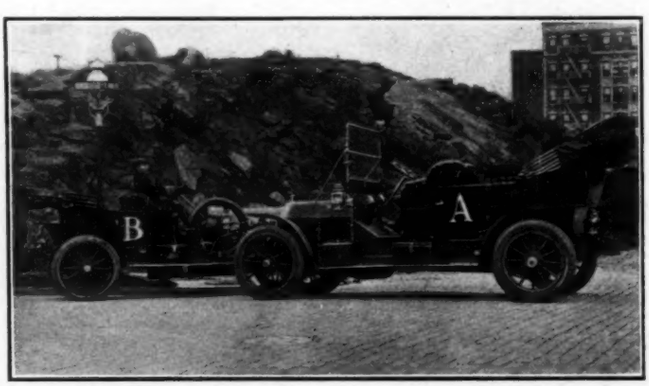


Fig. 2—How to cut in ahead of an automobile and prevent it from stopping quick enough to save trouble

curve in feet, with W for the weight of the automobile, then taking gas equal to 32.2 (the gravitational component) the following will hold:

$$v = \sqrt{\frac{2016\,g\,r}{W}} \div 1.46.$$

This is the velocity which will equal the adhesion of the tires and make skidding imminent. Of course there are a number of variables, and if the road is slippery and bad the velocity will be greatly in excess of that necessary to produce skidding.

A very interesting situation is suggested by Fig. 1. The automobile, which is emerging out of a side street, is also in direct line with a car which is going about its business on the main street. In this particular case the pavement was in good shape,

and while the driver was making a strenuous effort to stop his automobile, it is fortunate for both cars that he succeeded in doing so before the car which came down the lateral intercepted the one which is traveling on the main street. The driver of the car on the main street had a right to be there; the one which came down the lateral was in duty bound to drive cautiously.

Referring to Fig. 2, a second possibility is depicted in which the car A is shown as going up the street on the right side, which is legal driving. The car B, however, was traveling in the opposite direction, and on its right side until it came to the lateral, toward which it was turned. The car A was in its legal position, but the driver of car B was looking for trouble and turned sharply to the left, crossing the street in front of car A, putting the automobile in just such a position as would produce a collision, which was avoided in this case because it was not done on purpose.

A direct reversal of the conditions as shown in Fig. 2 are presented in Fig. 3, in which the car A is traveling up the avenue

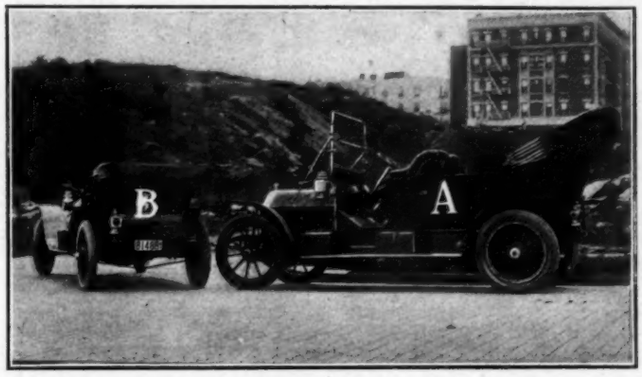


Fig. 3—Another ingenious way to get in line with a passing automobile and cause a wreck

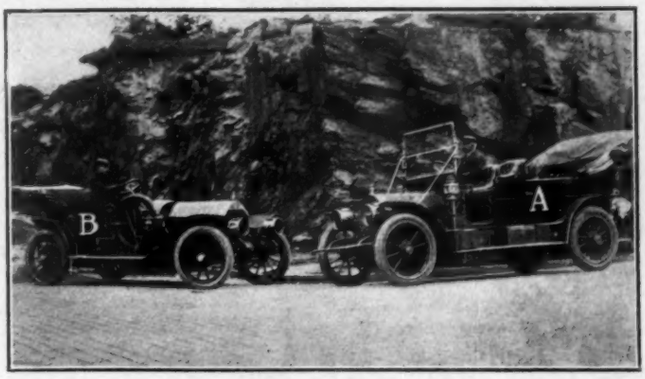


Fig. 4—One of the cleverest methods in vogue. This way almost invariably leads to a serious wreck

on the right side of the street, but the car B, when it came to a cross street, cut in ahead of the car A, for the purpose of turning out of the avenue into the lateral. It was obviously wrong driving, and it is just this character of road performance which is bound to lead to serious accidents in the majority of cases.

A very good way to wreck an automobile, with an excellent chance of bringing down a brace of them, is shown in Fig. 4. In this case the car A was traveling up the avenue on the right side, which is legal driving, and the car B shot out of the lateral, cut the in corner, which is wrong driving in any event, placing itself in line with the car A in such a way that the required distance in which to arrest motion was not afforded. Were this done in real life, instead of being premeditated, the seriousness of the situation is only too apparent. To bring wreckless driving to the absolute limit, it is necessary to do all of the wrong things that are here indicated, and, in addition, maintain the brakes in a state of bad repair, as they are in many cases in practice.

In the Process of Rejuvenating the Old Automobile

By J. B. MERCER

Working drawings of an up-to-date fore-door type of automobile body arranged for a Franklin Model H car. The new design is contrived for the convenience of an owner of an old automobile of this make if it is desired to bring the style and appearance up to the minute.

WHEN the body is out of style, the automobile is out of vogue; the only way to take advantage of the further service which the automobile may be capable of rendering is to build a new body and substitute it for the one which is at the bottom of the trouble. It is a dangerous undertaking to build a new body for a given make and model of automobile without first drawing the body to scale, making sure that it will fit on the particular automobile for which it is to be made. In a word, boots may be ordered by number with a fair measure of certainty, but automobile bodies cannot be built that way.

Referring to Fig. 1, which represents the Franklin Model H type of car as it would appear were it equipped with the fore-door style of body as here depicted. The specifications, covering the construction of this body, call for sheet aluminum, steel angle pieces, and castings to a certain extent, built up on a simple structure, such as may be hand fashioned of wood in an ordinary repair shop. Figs, 2, 3, and 4 are of the side, front, and top in elevation. Referring to Fig. 2, the framing is indicated by dotted lines. The pillar A makes the framing around the door; this is a continuous bent piece of ash extending from the top line of the seat all the way around, and terminating at the dash B. The pillar A is fitted to the curve of the seat, and the outer surface is finished so that it is in the plane of the seat panel. To prevent the joint from showing in the finished body work, this construction is recommended, since it allows the moulding which is placed on the seat to offset sufficiently to provide a good joint. Below the seat line the pillar is fitted back on to the underbody for a distance of 3-4 of an inch, which is agreeable to the further effort, as when the moulding is placed along the edge of the panel from the dash to the seat, when it will rest in line with the vertical moulding of the seat.

The pillar forms an offset measuring from the side of the body equal to the offset of the seat at its point of contact with the same, and the dash in front is brought out to the same line. The fastenings of the pillar to the body are by screws which pass through the panel and into the body framing. The underbody (as it will be found in the Model H Franklin car) will not have to be changed, and one of the advantages of this construction lies in the ease with which the new work may be added. The dash will have to be new, however, and it should be 3-4 of an inch thick, measuring up to the dimensions given in the drawing. The lock-post C is framed into the pillar at the bottom, and to the side rail at the top. The surfaces of the sides, and the door, should be covered with No. 16 gauge aluminum, fastened under the moulding at the top, to the curvature of the dash, and to the outer edge of the pillar. It should be turned in around the doorway, and at the joints of the front of the side of the seat.

The upright curve moulding, which gives effect at the pillar, should be riveted to the panel. On the right side, the framing and the moulding should be the same as on the left side, excepting that there is to be no cut in the door on the left side.

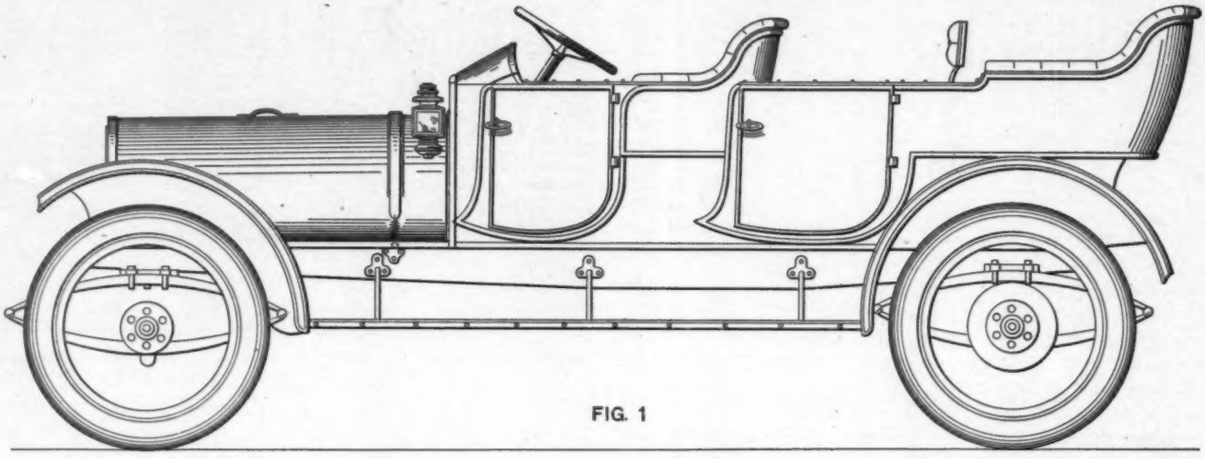


FIG. 1

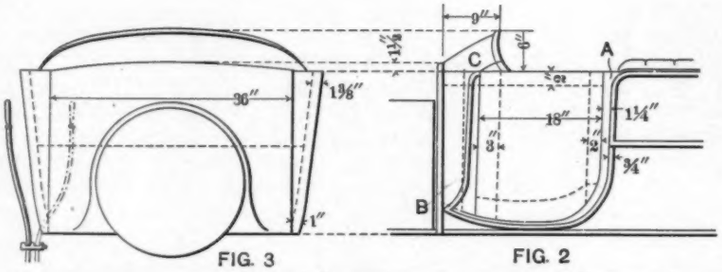


FIG. 3 FIG. 2

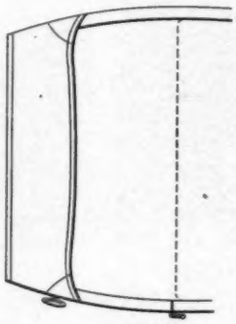


FIG. 4

Franklin Model H as it would look were the body as here shown made and used

The door framing is indicated by dotted lines, with dimensions which will govern the work. As a further aid in the process, the front view should be consulted and its dimensions conformed to. In order to bring out in a more pronounced way the modern trend in body work of this character, the hooded dash is so designed as to cover more of the side than is general in practice, and it is cut or parted on a line with the door opening. The lower section is fastened to the door top piece, and is so designed as to move outward with the same. The hinges, lock for the door, and handle are in keeping with the general design, and the artisan who undertakes the work should exercise some car in the process, in order to maintain a certain similarity of effect throughout.

The operation of the side levers of the automobile are always a problem in fore-door work, but in this case the solution of the problem is clearly presented in Fig. 3, showing one of the levers in dotted lines, and the other falling outside of the body. It is the change gear lever which passes to the inside, as indicated by the dotted lines. The quadrant is below the base line of the body, and the slit which must be made in the body to provide working room for the change gear lever, while it cuts away some of the frame, the weakening effect will be but slight, as the drawing shows. The side panel, just where the slit comes, is so contrived as to cover as much of the opening as possible. This is accomplished without making a bad showing, and what is equally to the point, very little of the framing is cut away.

Carelessness in the Automobile Repair Shop

When an automobile is sent to the repair shop to be overhauled it is frequently the case that the body work is so thoroughly abused that retouching becomes necessary. This is a bare circumstance as compared with the practice which prevails in having the body finished first and then start overhauling the chassis. It ends in ruin of the new finish of the body. The marks of the workmen, together with accumulations of grease, become indelible in the relatively soft finish of the body; it is just the character of repair shop that will do work in this way, that will also make the fatal mistake of working on the chassis before the newly-finished body is in a sufficiently hard state to withstand such abuse. Unfortunately, and to some extent to make the owner of the car believe that the work is progressing, the newly-finished body is placed on the unfinished chassis in just such cases. It would not be so bad were the body kept in the finishing room until the chassis is overhauled.

Accessibility is a Much Sought-for Jewel

Is it not rather strange that makers of automobiles stick so tenaciously to the conventional designs which do not include accessibility of the parts which are the most likely to get out of order? Why should a carbureter, for illustration, be placed between a red-hot exhaust manifold and a chassis frame, especially if it is of the type that is provided with four or five different adjustments, and is so contrived that the new owner will have to go through a series of maneuvers for perhaps two or three days after the automobile is delivered into his keeping. Perhaps this very inaccessibility of the carbureter is at the bottom of the reason why the automobile is delivered to the purchaser in such a state of incompleteness that he will have to tune it up if he wants to go anywhere. Why should not the designer do his own tuning up if he is so short of ingenuity that he is compelled to place the carbureter (of the type which must be adjusted) in a place where it cannot be got at?

Forced Lubrication—Trend in English Practice

By R. K. MORCOM

(Second Installment)

Dealing with the problems of lubrication with especial reference to force feed methods, showing how plain bearings are designed, and the results obtained. Very simple oil grooves are shown, and it is claimed that all that is necessary is a circumferential groove which will allow the oil to enter, so that a supply of oil is assured at the point of minimum film pressure. This is the second installment of the article as it was abstracted from a paper by R. K. Morcom, and read before the Inst. of Auto. Eng. (British), May 11, 1910.

THE chief points favoring forced lubrication brought out by the trials were its rapid adaptability to various conditions, its very positive maintenance of the all-important oil film, and the simplicity of the provisions necessary to ensure perfect lubrication. With splash and gravity systems elaborate oil grooves, troughs and oil ways are required, and often they are cut without due regard to theoretical considerations. With forced lubrication very simple oil grooves are satisfactory. All that is necessary is to provide a circumferential groove whereby a supply of oil is ensured at whatever point the minimum film pressure exists; the oil at this point will be forced right along the bearing, ensuring a perfect supply. Where more circulation is required, one or more horizontal grooves may be cut in the bearing at suitable points, forming practically an oil pad, and also by increasing the circulation, having an important cooling effect on the bearing. Circumferential oil grooves should not form a continuous band, but should be staggered, thus preventing the formation of a ridge on the journal due to lapping action.

Figs. 6 to 8 give suitable designs of oil grooves for forced lubrication.

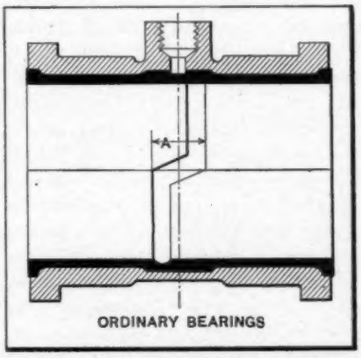


Fig. 6—Ordinary bearing with white metal lining, designed for forced lubrication

From various experiments it has been shown that bearings with forced lubrication will carry greater loads per square inch than others (this is largely due to the cooling effect of the copious supply and the certainty of the distribution), and it is interesting to consider the forces acting upon bearings in a motor car engine and those existing in a stationary engine of larger size. The load curves in Figs. 9 to 11 are fairly typical. The short period of reversal is noticeable in the petrol engine diagrams. The loads and rubbing speeds in neither case are very high, and are exceeded in many so-called slow-speed engines, and considerably exceeded in steam turbines.

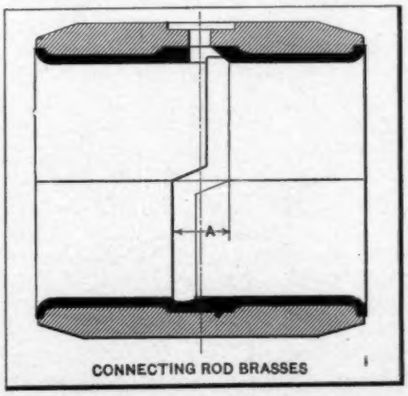


Fig. 7—Connecting rod bearing with white metal lining, designed for forced lubrication

The extent to which forced lubrication is applied varies with different makers. Some apply it to main bearings only, and others to main bearings and crankpins; others carry it to the gudgeon pin, and in some cases it is also carried outside to details of the transmission.

There seems little reason, if a pressure pump is included in the design, not to apply the pressure at any rate throughout the engine.

To consider the application to different parts of the engine in detail, the main bearings in a forced-lubrication system are quite closed in, and provided a good oil filter exists can be kept very clean. In the splash or trough systems dirt may and often does collect in the open oil ways, with consequent trouble. The oiling of crankpins by forced lubrication is very certain and positive, whereas with splash lubrication great care is often required to ensure a correct supply. Further, in these and other bearings in which reversals take place, a thicker film is maintained by forced lubrication.

For oiling the gudgeon pins which are heavily loaded and have comparatively small reciprocating motion (see Fig. 12), much is to be said in favor of forced feed. There is a tendency for oil to "cake" and often carbonize on the crank case side of the piston head, and the drip system usually arranged for with splash lubrication may be a source of trouble, carbonized oil and carbon dropping into the oil ways, and causing wear or clogging of the oil hole. Also, the oil is heated by the piston, and may be very hot and thin when it reaches its point of application.

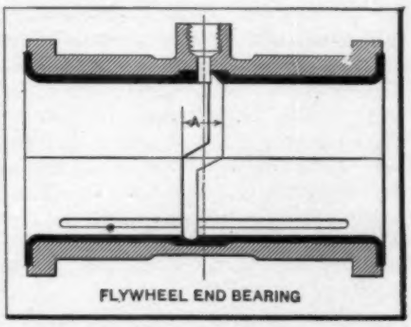


Fig. 8—Flywheel end bearing, of extra length, with white metal lining and arranged for forced lubrication

With forced lubrication supplied through a hollow rod or external pipe, a supply of clean, pure oil is ensured. One of the great merits of forced lubrication is that it is easy to arrange baffles to prevent excessive oil being carried up the piston trunks, while with splash lubrication the difficulty of ensuring an adequate supply to the gudgeon pins often leads to excessive lubrication of the pistons, and subsequent trouble with cylinders, valves and ignition. A sheet of metal with slots for the rods placed just to clear the big ends has been found satisfactory in practice.

The forced system requires means for preventing the efflux of oil from the main bearings. This is easily done by properly designed end plates, and baffles or thrower rings on the shaft.

The stream, responding to force, will be modified by other forces.

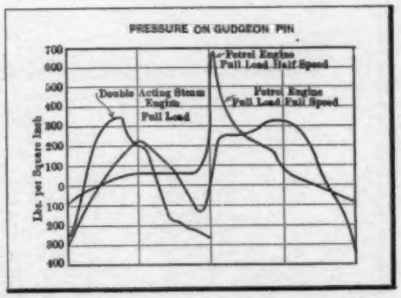


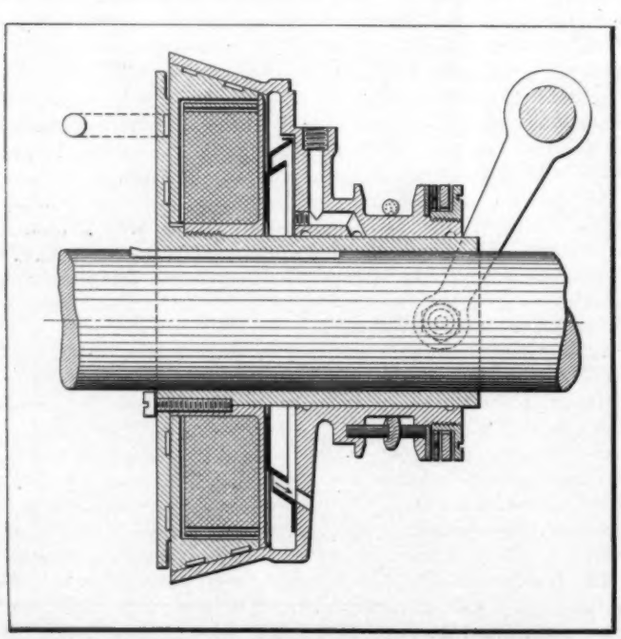
Fig. 9—Curve of pressure on gudgeon pin, indicating the short period of high pressure

Meat from Foreign Exchanges—Cut to the Bone

Digest Along Technical Lines for the Engineer

Hallot's quick-stopping and tire-saving brakes——Cellite, an uninflammable cellulose product made in Germany——Incidental advantages from offset cranks——Eberhard's book on air propeller design——Mathematical endorsement of roller bearings in France——Short and long stroke——Artificial rubber.

An intermediary brake mechanism whose purpose is to prevent an ordinary brake, actuated by it, from locking the wheels and which at the same time has the effect of regulating the pressure of this ordinary brake exactly in accordance with the requirements in each case and—by conjunction with a weak ordinary brake simultaneously operated—of bringing a vehicle to a full stop, if needed, much quicker than could be done without it, has been designed by Hallot, a French captain of artillery, and applied in practice to automobiles and railway cars. Briefly, the principle may be said to be that of a centrifugal brake brought into action by the driver and in turn actuating a normal brake which may be of any preferred type. The leverages regulating the pressures of the brake shoes may be increased, or the diameters of the brake drums may be increased, without fear of excessive tire wear, as the most sudden application of the mechanism will be powerless to keep the wheels from rotating, whether the ground is slippery or otherwise, since under all circumstances it is the rotary velocity of the live wheel axle which determines the energy of the brake pressure. In the accompanying illustrations is seen the lever actuated by the driver to push the clutch cone into engagement with the flanged sleeve, which is keyed to the wheel axle by means of the intermediate ring. By this action the vertical disk surface is pressed against the adjacent surface of the ring with a pressure proportional to the driver's braking effort. At the same time the weights, which are provided with braking surfaces and are free to move radially between partitions, which are secured to the flanged sleeve, are thrown out against the inner cylindrical surface of the friction ring, and hereby the clutch cone is engaged to rotate with the wheel axle, in so far as the centrifugal pressure is sufficient to make it do so. This tendency to rotate is transmitted by a cable to the ordinary brake by a leverage sufficient to produce a very strong effect if the centrifugal action of the weights is pronounced. It seems from the description that the driver's braking effort, when applied to the lever, is simultaneously applied to an ordinary brake, which in automobiles may be the external wheel brake or may operate internally in the drum, parallel with the centrifugally actuated brake, by dividing the drum surface into belts, one of which receives pressure from the ordinary brake and the other from the centrifugal brake. In whatever manner the ordinary brake action is arranged, its surfaces and leverages are so adjusted that this brake alone is incapable of locking the wheels at high speed. It is stated that the coefficient of friction between a brake shoe and a drum is much increased when the rapidity of motion of the revolving parts is reduced, and that this accounts for the very slight initial effect of ordinary brake action (the momentum alone, it is said, being insufficient to explain the observed results). In accordance herewith the combined action of the centrifugal brake and the ordinary brake, both operated at the same time, is shown graphically in the accompanying diagram, which also shows the curve of the simple customary brake action for comparison. A lengthy description of the Hallot system is given in *La Vie Automobile* for March 12 and a mathematical discussion of the interdependent forces set in motion by this compound braking system is presented in *La Technique Automobile et Aérienne* for April 15.



Centrifugal clutch for transmitting braking effort to the more powerfu of two brakes. Hallot brake system

Celluloid which does not burn may find new employments in automobiles and aeroplanes and is already displacing the old inflammable celluloid for cinematograph films. It is no longer a product of gun cotton, camphor and alcohol. The cellulose base is in the form of special acetates (acetic acid taking the place of nitric acid in the whole process), held in solution in tetrachlorides of acetylene or in suitable mixtures of denatured alcohol, acetic ether and amylic acetate. The material, called cellite, was developed by Dr. Eichengrün, a German savant, and is produced industrially by Bayer, Liesegang & Badische Anilin Company, of Darmstadt, Germany. Instead of the expensive Japanese camphor, the inventor has succeeded in making a synthetic camphor whose composition may be varied so as to produce celluloids, or cellites, more or less hard, and even as elastic as rubber. For other purposes than photographic films, in which perfect transparency is required, the new material will be cheaper than the old. The author intimates that the Eastman Company and the American Celluloid Company, the world's principal producers of films, may have been licensed to use the new process. In Franch, Dr. Clément Botrelle has developed another uninflammable celluloid in which there is substituted for the ethyl ether usually employed in the manufacture an ether of silicious base (Botrelle uses a hex-ethylic disilicate) which, when it evaporates, does not only bind the nitrated cellulose together, but also coats it with silica.—*Le Génie Civil,* May 14.

Elaborate investigations of offset of crankshafts by v. Doblhoff were referred to in these columns in the issue of May 26. In his continued report on this subject the author enters upon consideration of the reactions upon the motor and the motor suspension of the changed torque elements of the crankshaft, these reactions being among the causes of vibration in automobiles and therefore important. It is noted that with offset crankshaft the piston pressure enters as a factor in constructing the parallelograms of the tangential forces acting and

reacting at the crankpin, while in a straight motor the piston pressures are the same on both sides of the shaft and compensate themselves. The conditions differ somewhat, as between single, double and four-cylinder motors, and according to whether the cylinders are cast singly or in batteries, some of the stresses being balanced and annulled when the cylinders are cast *en bloc*. To arrive at his formulas the author is compelled to assume certain dimensions of the motor parts and he averages these from a number of actual four-cylinder designs. On this basis he develops graphically complete diagrams and curves showing the modifications in nearly all of the forces set going in five types of motors; namely, one normal motor, one with crankshaft offset one-fourth of the crankthrow, one with one-half offset, one with three-fourth offset and one with offset equal to the whole crankthrow. The friction of pistons (apart from the friction due to the expansive pressure of piston rings) is shown to decrease rapidly with small offset and then again to increase very rapidly at high offset, due of course to the high values on the compression and exhaust strokes. The balancing of the four-cylinder motor is shown not to be affected by the offset. A table is presented giving the numerical values for the various forces involved, and the total result is in favor of one-half offset, as previously mentioned. As incidental advantages, perhaps superior to the gains in mechanical utilization of power, the author mentions that the camshaft may be placed nearer to the crankshaft, if valves are all placed on one side, opposite to the offset, where they also ought to be for thermic reasons. By this disposition the camshaft gears can be made smaller, and no intermediate gears will be required, while noise will be reduced. To get these advantages in full measure it will, however, be necessary to cut a slit for the connecting-rod in the lower portion of the cylinder wall, and the author shows how this should preferably be done. The offset motor should be designed to turn "right" instead of "left," as is customary. Then the cylinders can be placed a little to the right under the bonnet; the camshaft, the valves and all auxiliary organs, as pump and magneto, can be placed to the left, where they are accessible, and there will be ample room left for the steering pillar and gear to enter the bonnet to the right, and the exhaust can be taken rearward on the left in the usual way without interfering with pedals and steering gear.—*Der Motorwagen,* May 10 and 20.

The square motor seems definitely abandoned. The ratio of stroke divided by bore oscillates from 1.2 to 1.4 for single cylinders, with an upward tendency. The long-stroke motors have shown what they can do in the recent voiturette races. A 100 x 120 gives about 12 horsepower; a 100 x 140 gives already 14 horsepower; a 100 x 180 exceeds 18 horsepower; and finally a 100 x 250 gives more than 30 horsepower with a fuel consumption lower than that of the 100 x 120. While the 100 x 250 will not become general, it is an assured fact that the 100 x 120 and even the 100 x 130 will presently prevail over the square type. In four-cylinder and six-cylinder motors the increase in the ratio of stroke to bore is still more notable. Motors of 75 x 125 and even 75 x 150 are current to-day, also 65 x 105 and 65 x 130. In brief, theory says long motors with high piston speed, and practice does not contradict the theory.—*La Vie Automobile,* May 14.

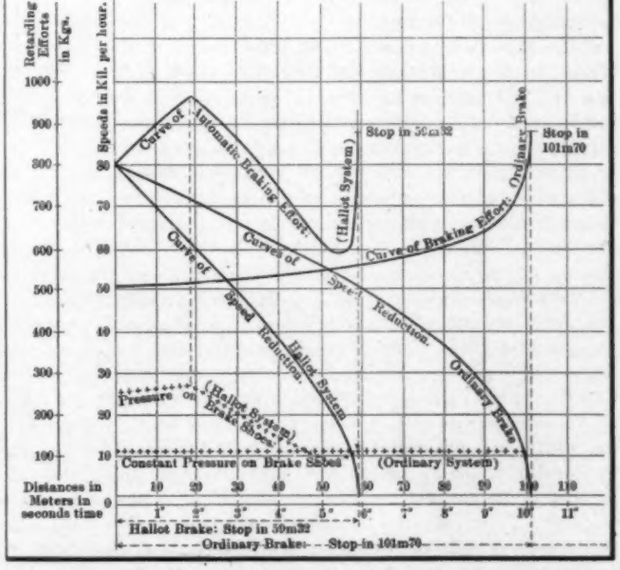
In a treatise on ball and roller bearings in *Technique Moderne* for April the author calls attention to the frequency with which the maximum stresses figured on by designers and according to which the dimensions of the bearing members are selected, are calculated from normal running conditions of the vehicle, while the balls or rollers and the races are in reality subjected to much heavier strains when the brakes are applied. In calculating formulas for maximum loads he sets aside the tensile strength and the elongation of the steel used in the bearing members as unimportant in comparison with the elastic limit and the modulus of elasticity and arrives at the result that, for a given diameter of the bearing and also given transverse dimensions, a roller bearing in which the rollers are rounded and run in races of similiarly rounded cross-section, and in which a suitable cage is provided, will not only support loads nearly four times as large as those a ball or ordinary roller bearing will endure, but may also be more easily mounted and dismounted.

Those interested in synthetic rubber and its economical production will find in *Engineering* (London) for May 13 an exposition of the work which has been done in this direction, with a list of the workers who have been or are engaged in it, the chemical difficulties met when organic substances are subjected to violent reactions, and a statement of the latest results.

When a glass bell in which a fly is captive is placed on a most minutely accurate pair of scientific scales, it weighs exactly the same, whether the fly sits on the wall or flies around the air in the bell. From an article by F. Bendemann in *Zeitschrift des Vereines Deutscher Ingenieure.*

"To build an aerial propeller without a more or less hollow pressure surface would nowadays scarcely occur to any designer," says C. Eberhardt in the preface to his important work, "Theory and Calculation of Air Screws, with Examples and Experimental Results from Practice." The author, whose untimely accident was recently announced, had for a number of years been the leading designing engineer in connection with the German military dirigible balloons, and as such had opportunity to verify in practice those design formulas for propellers which are placed at the disposal of the reader in the work referred to. If he had not found a very close correspondence between theory and practice he would not have dared, he says, to recommend his results for practical application by others. Throughout the book the mathematical deductions are presented as simply as possible, while the reasoning is submitted step by step to the reader's judgment. Good judgment is more important to the working engineer than mathematics, the author admits, but can only be developed on the basis of rich experience in the special field in which it must be exercised. Lilienthal's experimental research on the subject he has usually found correct and applicable, as far as it goes. And in accordance with this early investigator, the arching of the propeller surface should decrease in degree as the linear velocity increases. In the propeller of the Wright machines it is found, however, that the arching or curvature is about 1-26 near the hub and increases to about 1-20 at the ends, which is not considered correct, but probably is dictated by considerations of strength and the comparatively small importance of the propeller's efficiency in the portions whose velocity is smallest.—Published by M. Krayn, Berlin, W.; price 6 mark.

A certain steam motor builder in one of the northern counties still uses "flat" drills, even for drilling holes that should bear some resemblance to a circle.—*Commercial Motor,* June 2.



Comparative diagram of stop action with the Hallot system and with ordinary brakes

Questions That Arise—General in Scope

Outlining the importance of using pure ingredients in the manufacture of storage battery solutions, and affording methods of testing in order to locate iron, copper, mercury, nitrates, and chlorine in electrolyte. The effect of temperature is discussed and acid strength for each temperature change is taken up.

[94]—What is the reason for making the adjustment when the battery is fully charged?

It is during this condition that the electrolyte is at maximum strength; all the sulphion, instead of being in chemical relation with the active material on the grids, will be dissolved in the solution, and it will then be possible to make the adjustment.

[95]—What has temperature to do with the strength of the electrolyte?

The percentage of sulphion present in the electrolyte, considering a given specific gravity, varies with the temperature. In order to arrive at a given percentage of the sulphion, then, at a given specific gravity, it is necessary to make all measurements at a constant temperature.

[96]—At what temperature should the specific gravity be measured?

This is a matter which does not have to be definitely established, provided all measurements are made at some one temperature, say 75 degrees Fahrenheit (or the equivalent on any other scale of temperatures) although it is the custom of chemists to make comparisons at 60 degrees Fahrenheit.

[97]—Why select 75 degrees Fahrenheit as the temperature at which to make the comparison?

It is a close (average) approximation of the surrounding temperature, and will be easier to realize. Were it desired to make all comparisons at 60 degrees Fahrenheit, it would be necessary to immerse the cells in a water bath; bring the same to 60 degrees Fahrenheit, and, after the cells fall to this temperature, make the measurements.

[98]—Is there any way to make these comparisons without having to go to so much trouble?

Yes. Use a calibrating scale, which will give the equivalent percentage of the suphion present for any given temperature as compared to the sulphion present at 60 degrees Fahrenheit.

[99]—Is it possible to note impurities, if they are present, during the process of equalizing, using the hydrometer for the purpose?

No. While it is true that foreign substances, were they present in quantity, would alter the weight of the liquid per unit of volume, nevertheless it is not possible to note the difference on the scale of a hydrometer as it is used in this service. The only way to determine the presence of foreign ingredients is to test for them.

[100]—How is this done?

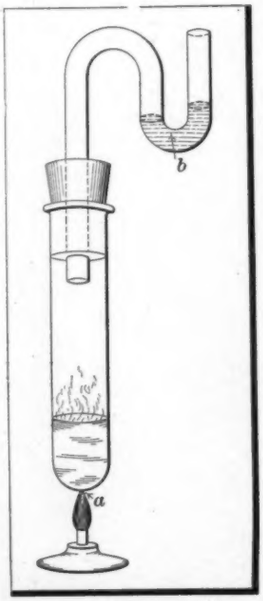
Since it is not necessary to determine the quantity of each undesirable element present, all that has to be done is to make a "quantitative" analysis.

[101]—What are the elements that are likely to be present, for which a search will have to be made?

Nitrates, chlorine, mercury, iron, copper and such elements as are normal impurities in the materials used in the manufacture of the batteries.

[102]—Where do the nitrates, chlorine, iron, etc., come from?

Nitrates are most likely to be present in the cells of battery as they come from the makers, due to the use of nitric acid in the forming solution. Chlorine might come from the use of salt water, or the presence of salt in the water used to dilute the electrolyte, or in the replenishing of the electrolyte during maintenance; it is more likely to be present if the cells are made by a process using chloride of lead in the manufacture. Iron may be present as the result of carelessness; the average operator is very fond of determining if the cells are "dead," using a screwdriver as a means of short-circuiting the plates or elements of the battery; the screwdriver will be partially dissolved in the electrolyte. Iron is also present in sulphuric acid, which is made from iron pyrites; this character of sulphuric acid should not be used in the manufacture of sulphuric acid electrolyte. Mercury may come from the thermometer bulb; if one is broken during the taking of temperature, this trouble will be imminent. Hydrometers, as used in battery work, should be shot-ballasted; mercurial poisoning will then be avoided. Copper comes from the close proximity of the copper leads and brass terminals used in connecting up the batteries.



Nitrate test tube which is used when it is desired to locate a mere trace of nitrate in electrolyte

[103]—Which of the impurities is the most damaging?

Nitrates, perhaps; chlorine is very detrimental; mercury is much to be avoided; copper is not so bad; iron has a very bad effect upon the strength of the supporting grids.

[104]—How much of these ingredients may be tolerated in batteries?

The merest trace will have its effect in time; just enough to strongly indicate the presence of a nitrate, chlorine, or iron, will be sufficient to demand that the battery be subjected to a purifying process.

[105]—By what method can a battery be rid of such undesirable elements?

(a) Charge the battery to drive out all the sulphion; (b) substitute pure electrolyte for the contaminated solution; (c) repeat this performance as many times as may be necessary, discharging the battery each time in its fresh bath of electrolyte before substituting the new and pure electrolyte. During each new charge some of the impurity will be driven off.

[106]—How may a test for chlorine be made if it is suspected to be present in a storage battery and it is desired to purge the battery of this dreaded impurity?

To a small quantity of the electrolyte of the battery in a test tube, add a few drops of nitrate of silver in solution: a curdy white precipitate, if it forms, will denote the presence of the chlorine. The white formation is soluble in ammonia water, and is precipitated out by nitric acid. This precipitate is chloride of silver, which will melt to a horny mass, and when exposed to light, turns violet.

[107]—By what method may iron be detected in a battery?

The per salts of iron are foxy red. In solution with yellow prussiate of potassium the yield is dark prussiate of blue, and this fact leads to prompt detection. Proto salts of iron, on the other hand, are green, and their solutions precipitate with red prussiate of potassium; use solutions of potassium in making the respective tests.

[108]—In what way may mercury be detected if it is present in a battery?

Mercurious salts deliver a black precipitate if limewater is added. The precipitate will be olive green if iodide of potassium is used instead of lime water. For mercuric salts, on the other hand, the precipitate will be yellow if lime water is added, and it will be scarlet if iodide of potassium is added.

[109]—What is the nature of the test which is utilized to detect copper in a battery?

To the electrolyte add liquor potassæ. A blue precipitate will fall down; it will prove out as copper if it turns black when boiled.

Report on Cast Iron Test Bars

(Second and Last Installment)

IN order that we may be able to construct a formula to be used in the design of a beam made of material whose crushing and tensile strength are not equal, we must know the ratio between them. It may be reduced as follows (referring to Fig. 1, June 9 issue, page 1053):

Let M = bending moment $= \frac{Pl}{4}$ for load at center of span.

P = load at center.
l = length between supports.
S_c = compressive strength.
S_t = tensile strength.
b = breadth of beam.
d = depth of beam.
a = distance to extreme fiber on compression side.
f = distance to extreme fiber on tension side.
K = ratio compressive strength to tensile strength.

All dimensions are in inches.

We have the moment of resistance on the compression side

$$\int_0^a b\sigma y\,dy = \int_0^a b\,S_c\frac{y^2}{a}\,dy = \frac{ba^2}{3}S_c$$

and in like manner we find the moment of resistance on the tension side to be $\frac{bf^2}{3}S_t$. Since these two resistances are on opposite sides of the neutral axis they must be equal, or

$$\frac{ba^2}{3}S_c = \frac{bf^2}{3}S_t \text{ or } \frac{a^2}{f^2} = \frac{S_t}{S_c} = \frac{1}{K}$$

$$\therefore f = a\sqrt{K}$$

Since the sum of these two resistances must be equal to the bending moment we have

$$M = \frac{ba^2}{3}S_c + \frac{bf^2}{3}S_t$$

Substituting KS_t or S_c

$$M = \frac{bS_t}{3}(Ka^2 + f^2) = \frac{Pl}{4}$$

$$Pl = \frac{4}{3}bS_t(Ka^2 + f^2) = \frac{8}{3}bS_ta^2K$$

$$d = a + f = a(1 + \sqrt{K})$$

$$\therefore a^2 = \frac{d^2}{(1+\sqrt{K})^2}$$

Substituting again

$$Pl = \frac{8}{3}bd^2\frac{K}{(1+\sqrt{K})^2}S_t$$

$$S_t = \frac{3}{8}\frac{(1+\sqrt{K})^2}{8K}\frac{Pl}{bd^2}$$

If we substitute 1.747 for K we get $S_t = \frac{Pl}{1.155\,bd^2}$ or Clark's formula.

Taking the average compressive strength of cast iron as 112,000 lb. per sq. in., and the average tensile strength as 28,000, or $K = 4$, we have

$$S_t = \frac{Pl}{1.185\,bd^2}$$

Applying this formula as Mr. Nagle does Clark's, in his paper, we have

$$\frac{2372 \times 1.185 \times 2 \times 1 \times 1}{2.4} = 2350$$

As will be seen, this formula gives results within 1.4 per cent of those obtained from the test.

A. A. CARY. It is unfortunate that the value of the structural study of metals and alloys, by use of the pyrometer and microscope, is not more widely appreciated. I feel safe in saying that by such means all variations such as noted in Mr. Nagle's paper can be most satisfactorily accounted for. In iron and steel the fact is now generally recognized that metals identical in chemical composition may possess widely differing mechanical properties which are quickly recognized by microscopic examination.

Chemical analyses, as given in Table 1 of the paper, are undoubtedly of considerable value in the investigation of cast-iron; but without a physical examination our knowledge of the ability of the metal to withstand stresses and strains is very uncertain. Not only will investigations of this kind show us the cause of the variations noted in Mr. Nagle's paper, but they will give us the information needed to produce a metal of great uniformity.

PROF. T. M. PHETTEPLACE. It would be interesting to know whether a thorough sand-blasting would have any effect, as different results seemed to be obtained by cleaning off the skin of the material.

THE AUTHOR. Since the paper was written I have had opportunity to examine some instructive records of eleven sets (of three each) of round test bars. The bars were 1¼ inches in diameter, rough, on 12-inch supports, the breaking loads being corrected for actual diameters. The deflections were not corrected.

BREAKING LOADS IN POUNDS, DEFLECTION FROM 0.12 IN. TO 0.15 IN.

1.....	3,276	3,185	3,044	4,400	4,005	2,913	3,276	3,306	3,382	3,204	3,268
2.....	3,367	3,276	3,162	3,100	3,913	3,003	3,185	3,204	2,976	3,204	3,124
3.....	3,276	3,534	3,255	3,500	3,640	3,115	3,026	2,937	3,003	2,912	2,812

The three bars in each set were cast in three separate molds, No. 1, or the upper line, being cast from the first pour of the ladle, No. 2 from the middle, and No. 3 from the bottom. It will be observed that in eight of these eleven sets, the bar selected from the two nearest in agreement, came from the middle of the pour, and that all of the extreme variations were found in either the first or last pour. If we have only two bars they would differ as much as 22 per cent, while if we took the two out of three nearest in agreement, those two would not vary more than 2 per cent. or 3 per cent.

I am very glad that Mr. Peek has taken up the mathematical solution of fitting a formula to the facts. Whether his demonstration or Clark's is the correct, or the better, one, I will not attempt to say, but it is a pleasure to find that the two methods agree so well with the facts. I trust that this publicity will banish the old form of formula from the text books.

Professor Gregory has made an oversight in the dimensions of my bars. Being twice as wide as his, the deflections do not show very great variations: as 4 by 0.09 = 0.36 to 0.45, instead of 8 by 0.09 = 0.72 to 0.45.

I have had no experience with bars 1 inch by 1 inch by 12 inches, but I think that 0.15 inch deflection would be difficult to realize in machinery castings.

The Relation of Weight to Roadability

Editor THE AUTOMOBILE:

[2,289]—Generally speaking, is a light or a heavy weight car preferable for use on sandy roads? The various advocates fail to agree on this point. Surely there must be some principle involved. Perhaps some reader of THE AUTOMOBILE will be able to evolve a reasonable answer. FRANCIS E. LESTER.

Messilla Park, N. H.

There must be sufficient traction to transfer the power of the motor, as it is demanded in the process of driving the automobile, to serve the end. This is a matter which is controlled by the weight on the driving wheels. Every automobile, be it light or heavy, seems to satisfy this demand. If the going is bad, there must be power enough to drive the automobile when the wheels sink into the roadbed. If the wheels are of large diameter, the situation seems to be improved. Under the circumstances it would appear as if three points must be considered, i e.:

(a) The power must be adequate for the purpose.

(b) The traction must be enough to prevent the road wheels from slipping.

(c) The diameter of the road wheels must be large enough to keep the grade within that which an automobile can negotiate; they travel up grade all the time that they are in a depression.

A Question in Relation to Front Wheels

Editor THE AUTOMOBILE:

[2,290]—Will you state why makers of automobiles set the front wheels out of the vertical plane? J. B. WILSON.

Toronto, Canada.

It is desired that the wheels ride on "plumb" spokes; the road is given a camber; the wheels are set to the same angle from the horizontal, in order that they will ride on plumb spokes.

Why Are Cylinders Beveled at the Bottom?

Editor THE AUTOMOBILE:

[2,291]—I went into a garage the other day and the repairmen were working on the cylinders of a motor, and I noticed that there was a bevel at the bottom of the cylinders. What is it for?

Buffalo, N. Y. CURIOUS.

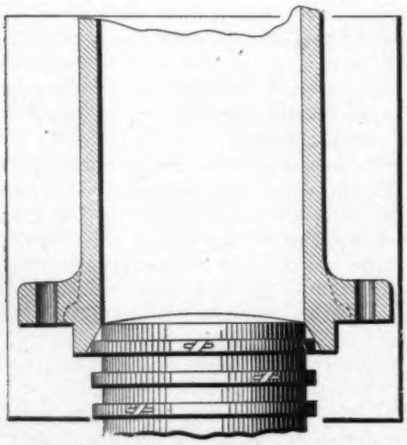


Fig. 1—Showing bevel at the bottom of the bore of the cylinder which is there to help enter the piston

The use of the bevel is shown in Fig. 1. When the piston is being put back into the cylinder the piston rings will be in the expanded position, and without the bevel it would be almost impossible to insert the piston without at least damaging the rings. With a suitable bevel and the use of two pieces of flat steel, the pistons may be put back into the cylinders, and the rings will close in without trouble.

Series Connection for Ignition Batteries

Editor THE AUTOMOBILE:

[2,292]—What is the right method of connecting ignition batteries, using, say, five dry cells? NEW OWNER.

Erie, Pa.

See Fig. 2. The inter-connections are from zinc to carbon in each case; one lead from the interrupter goes to the zinc at one end and the other lead to the carbon.

Gasoline Will Cause Carbon Accumulations

Editor THE AUTOMOBILE:

[2,293]—I do not see how the use of a limited amount of good lubricating oil will result in an accumulation of carbon in the combustion chamber of a motor, but the carbon does accumulate, and I am at a loss to account for it. SUBSCRIBER.

Nashville, Tenn.

Referring to Fig. 3, A represents the motor cylinder, B is the piston and C is the mixture which is too rich in gasoline, and carbon is precipitated out. The figure to the left, in the same view, is of a retort in which D is the carbonaceous material which is placed in the hermetically sealed chamber for the purpose of distilling off the more volatile matter, and the residuum is carbon. The door C of the chamber must be tight enough to exclude air. E represents a fire built on a grate in a fire box under the chamber D. Fuel is placed on the grate through the door B; draft is through A, and the grate up the chimney G; ashes are shown at F. The combustion chamber of a motor is to all intents and purposes a chamber such as that shown at D, and if carbonaceous material is placed in the combustion chamber C of the motor cylinder, without enough oxygen to burn the carbon, the residuum will be the very carbon complained of, nor does it matter that the carbonaceous material is in the hydrocarbon form known as automobile gasoline. The way to avoid this carbon formation is not to use too much gasoline.

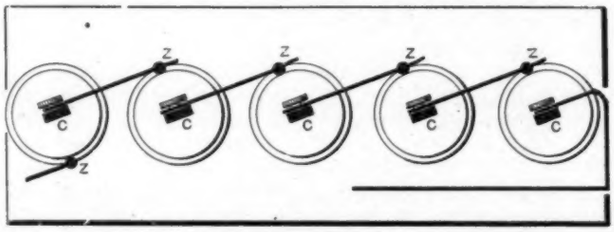


Fig. 2—Showing series connections of dry cells of battery as used in ignition work

Depends Upon Pressure or Gravity Feed

Editor THE AUTOMOBILE:

[2,294]—Will you please answer the following questions through the columns of your paper:

1. How are gasoline tanks on automobiles located with reference to the floor of the car? Are the bottoms of tanks above, below or on the level with floor in general?
2. What is the usual capacity of gasoline tanks now in use?
3. What are the shapes in use?
4. Is there such a thing as standard sizes, or does each company make its own particular shapes and sizes?

Bridgeport, Conn. JAMES S. HALL.

1. In gravity feed work the gasoline tank must be located at least one foot above the float bowl of the carbureter, which condition is independent of every other consideration. In pressure feed work the gasoline tank is located below the deck of the body, and generally below the top of the chassis frame.

2. The capacity of the gasoline tank for a 50-horsepower touring car is about 20 gallons. For a 30-horsepower touring car it is about 16 gallons, and for a 20-horsepower car it is about 10 gallons. A five-gallon tank will feed a "one lunger" for 100 miles.

3. Round or oval tanks are preferred; walls without curves bulge out unless they are braced by means of surge plates, of which two are used in most tanks.

4. Each company uses a gasoline tank which will fit into the space available in view of the design, and the placing of other essentials.

Transformer for Recharging Storage Batteries

Editor THE AUTOMOBILE:

[2,295]—Will you kindly describe in your "Letters Interesting, Answered and Discussed" how to construct cheaply an efficient transformer for recharging storage batteries, say from alternating current (110 volts), as supplied for lighting purposes, and the ordinary storage battery, 6 volts, 60 amperes? G. H. J.

San Mateo, Cal.

Storage batteries cannot be charged by means of a transformer. The transformer would still deliver an alternating current, and since an alternating current delivers its impulses in alternate directions the battery would be discharged as much as it would be charged per cycle of the alternating current. A mercury rectifier will do this work. They are not easy to make in an experimental way, but one can be had at a reasonable price from some one of the big electrical companies who manufacture them.

Look Out for Secondary Moments in Speeding

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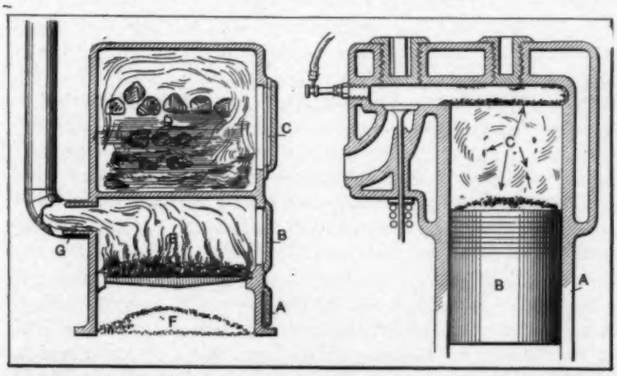
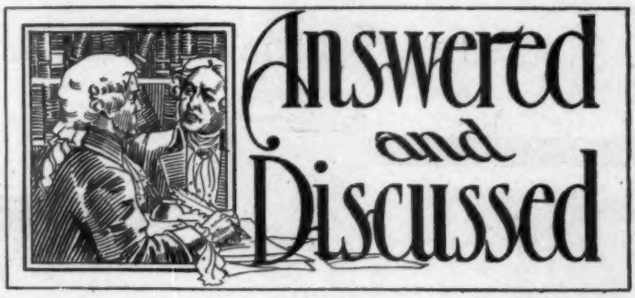


Fig. 3—Coke oven, showing its relation to the combustion chamber of a cylinder of a motor



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Read "The Automobile"—See June 9 Issue

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The Relation of Weight to Roadability

Editor THE AUTOMOBILE:

[2,289]—Generally speaking, is a light or a heavy weight car preferable for use on sandy roads? The various advocates fail to agree on this point. Surely there must be some principle involved. Perhaps some reader of THE AUTOMOBILE will be able to evolve a reasonable answer. FRANCIS E. LESTER.

Messilla Park, N. H.

There must be sufficient traction to transfer the power of the motor, as it is demanded in the process of driving the automobile, to serve the end. This is a matter which is controlled by the weight on the driving wheels. Every automobile, be it light or heavy, seems to satisfy this demand. If the going is bad, there must be power enough to drive the automobile when the wheels sink into the roadbed. If the wheels are of large diameter, the situation seems to be improved. Under the circumstances it would appear as if three points must be considered, i.e.:

(a) The power must be adequate for the purpose.

(b) The traction must be enough to prevent the road wheels from slipping.

(c) The diameter of the road wheels must be large enough to keep the grade within that which an automobile can negotiate; they travel up grade all the time that they are in a depression.

A Question in Relation to Front Wheels

Editor THE AUTOMOBILE:

[2,290]—Will you state why makers of automobiles set the front wheels out of the vertical plane? J. B. WILSON.

Toronto, Canada.

It is desired that the wheels ride on "plumb" spokes; the road is given a camber; the wheels are set to the same angle from the horizontal, in order that they will ride on plumb spokes.

Why Are Cylinders Beveled at the Bottom?

Editor THE AUTOMOBILE:

[2,291]—I went into a garage the other day and the repairmen were working on the cylinders of a motor, and I noticed that there was a bevel at the bottom of the cylinders. What is it for? CURIOUS.

Buffalo, N. Y.

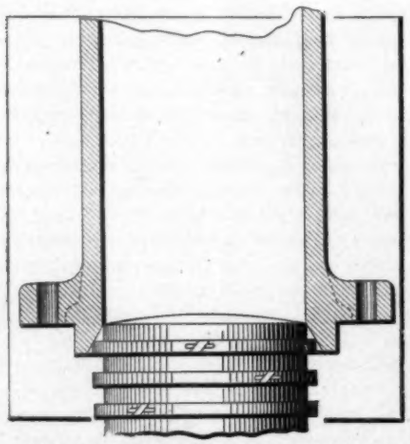

Fig. 1—Showing bevel at the bottom of the bore of the cylinder which is there to help enter the piston

The use of the bevel is shown in Fig. 1. When the piston is being put back into the cylinder the piston rings will be in the expanded position, and without the bevel it would be almost impossible to insert the piston without at least damaging the rings. With a suitable bevel and the use of two pieces of flat steel, the pistons may be put back into the cylinders, and the rings will close in without trouble.

Series Connection for Ignition Batteries

Editor THE AUTOMOBILE:

[2,292]—What is the right method of connecting ignition batteries, using, say, five dry cells? NEW OWNER.

Erie, Pa.

See Fig. 2. The inter-connections are from zinc to carbon in each case; one lead from the interrupter goes to the zinc at one end and the other lead to the carbon.

Gasoline Will Cause Carbon Accumulations

Editor THE AUTOMOBILE:

[2,293]—I do not see how the use of a limited amount of good lubricating oil will result in an accumulation of carbon in the combustion chamber of a motor, but the carbon does accumulate, and I am at a loss to account for it. SUBSCRIBER.

Nashville, Tenn.

Referring to Fig. 3, A represents the motor cylinder, B is the piston and C is the mixture which is too rich in gasoline, and carbon is precipitated out. The figure to the left, in the same view, is of a retort in which D is the carbonaceous material which is placed in the hermetically sealed chamber for the purpose of distilling off the more volatile matter, and the residuum is carbon. The door C of the chamber must be tight enough to exclude air. E represents a fire built on a grate in a fire box under the chamber D. Fuel is placed on the grate through the door B: draft is through A, and the grate up the chimney G; ashes are shown at F. The combustion chamber of a motor is to all intents and purposes a chamber such as that shown at D, and if carbonaceous material is placed in the combustion chamber C of the motor cylinder, without enough oxygen to burn the carbon, the residuum will be the very carbon complained of, nor does it matter that the carbonaceous material is in the hydrocarbon form known as automobile gasoline. The way to avoid this carbon formation is not to use too much gasoline.

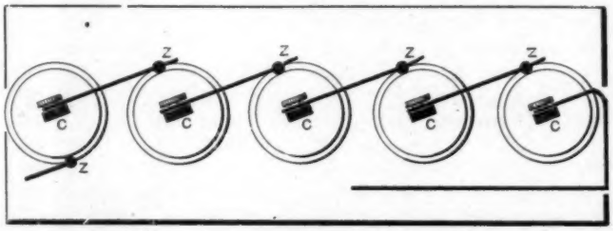

Fig. 2—Showing series connections of dry cells of battery as used in ignition work

Depends Upon Pressure or Gravity Feed

Editor THE AUTOMOBILE:

[2,294]—Will you please answer the following questions through the columns of your paper:

1. How are gasoline tanks on automobiles located with reference to the floor of the car? Are the bottoms of tanks above, below or on the level with floor in general?
2. What is the usual capacity of gasoline tanks now in use?
3. What are the shapes in use?
4. Is there such a thing as standard sizes, or does each company make its own particular shapes and sizes?

Bridgeport, Conn. JAMES S. HALL.

1. In gravity feed work the gasoline tank must be located at least one foot above the float bowl of the carbureter, which condition is independent of every other consideration. In pressure feed work the gasoline tank is located below the deck of the body, and generally below the top of the chassis frame.

2. The capacity of the gasoline tank for a 50-horsepower touring car is about 20 gallons. For a 30-horsepower touring car it is about 16 gallons, and for a 20-horsepower car it is about 10 gallons. A five-gallon tank will feed a "one lunger" for 100 miles.

3. Round or oval tanks are preferred; walls without curves bulge out unless they are braced by means of surge plates, of which two are used in most tanks.

4. Each company uses a gasoline tank which will fit into the space available in view of the design, and the placing of other essentials.

Transformer for Recharging Storage Batteries

Editor THE AUTOMOBILE:

[2,295]—Will you kindly describe in your "Letters Interesting, Answered and Discussed" how to construct cheaply an efficient transformer for recharging storage batteries, say from alternating current (110 volts), as supplied for lighting purposes, and the ordinary storage battery, 6 volts, 60 amperes? G. H. J.

San Mateo, Cal.

Storage batteries cannot be charged by means of a transformer. The transformer would still deliver an alternating current, and since an alternating current delivers its impulses in alternate directions the battery would be discharged as much as it would be charged per cycle of the alternating current. A mercury rectifier will do this work. They are not easy to make in an experimental way, but one can be had at a reasonable price from some one of the big electrical companies who manufacture them.

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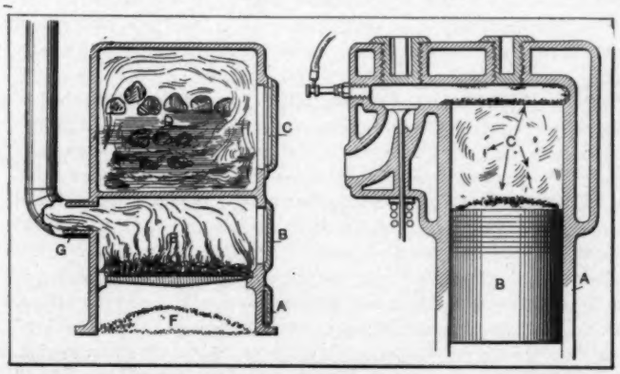

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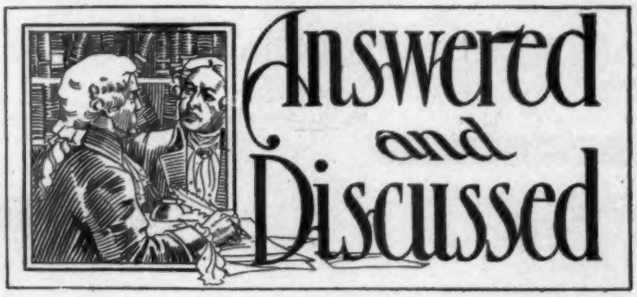

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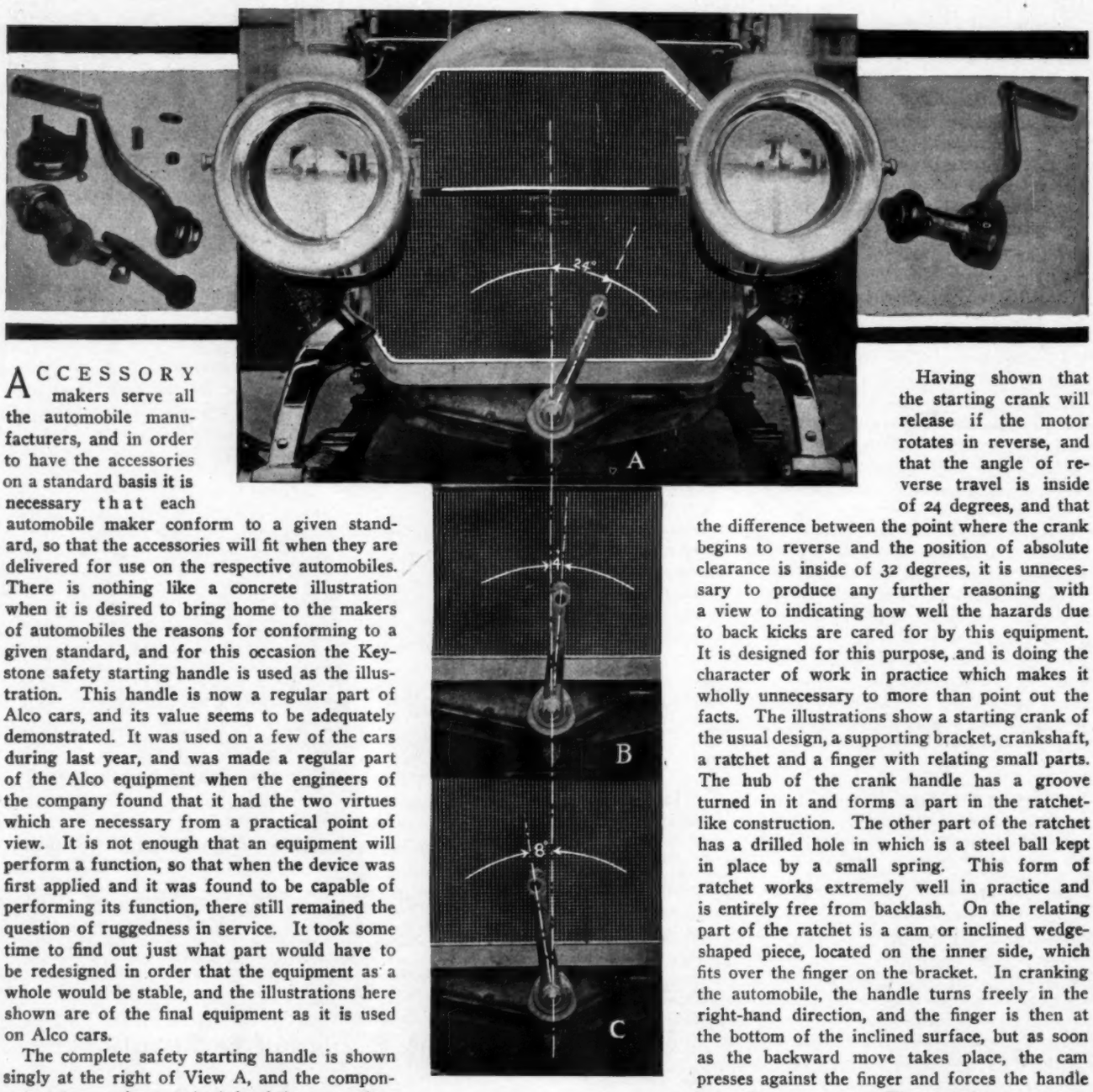
The Problems of Standardization Are Prominent



ACCESSORY makers serve all the automobile manufacturers, and in order to have the accessories on a standard basis it is necessary that each automobile maker conform to a given standard, so that the accessories will fit when they are delivered for use on the respective automobiles. There is nothing like a concrete illustration when it is desired to bring home to the makers of automobiles the reasons for conforming to a given standard, and for this occasion the Keystone safety starting handle is used as the illustration. This handle is now a regular part of Alco cars, and its value seems to be adequately demonstrated. It was used on a few of the cars during last year, and was made a regular part of the Alco equipment when the engineers of the company found that it had the two virtues which are necessary from a practical point of view. It is not enough that an equipment will perform a function, so that when the device was first applied and it was found to be capable of performing its function, there still remained the question of ruggedness in service. It took some time to find out just what part would have to be redesigned in order that the equipment as a whole would be stable, and the illustrations here shown are of the final equipment as it is used on Alco cars.

The complete safety starting handle is shown singly at the right of View A, and the component parts are given at the left of the same view. In View A the starting crank is shown rotated 24 degrees to the right of the vertical line, at which point the back kick began in the experiment which was conducted for the purpose of showing how far in the reverse direction the crank would travel before its mechanism would bring it into the release position. In View B the releasing mechanism is just letting go; the angle is 4 degrees to the right of the vertical line, so that the difference between the angle in View A and the angle in View B is the distance of angular travel which must be displaced in order to effect the release of the crank during a back kick. This angle as shown is 20 degrees. In View C the crank stands 8 degrees to the left of the vertical center, which is the position the crank took in the worst case, which 8 degrees represent the point at which the crank jaws are absolutely clear, with no chance whatever of interference between the jaws and the driving pin.

Having shown that the starting crank will release if the motor rotates in reverse, and that the angle of reverse travel is inside of 24 degrees, and that the difference between the point where the crank begins to reverse and the position of absolute clearance is inside of 32 degrees, it is unnecessary to produce any further reasoning with a view to indicating how well the hazards due to back kicks are cared for by this equipment. It is designed for this purpose, and is doing the character of work in practice which makes it wholly unnecessary to more than point out the facts. The illustrations show a starting crank of the usual design, a supporting bracket, crankshaft, a ratchet and a finger with relating small parts. The hub of the crank handle has a groove turned in it and forms a part in the ratchet-like construction. The other part of the ratchet has a drilled hole in which is a steel ball kept in place by a small spring. This form of ratchet works extremely well in practice and is entirely free from backlash. On the relating part of the ratchet is a cam or inclined wedge-shaped piece, located on the inner side, which fits over the finger on the bracket. In cranking the automobile, the handle turns freely in the right-hand direction, and the finger is then at the bottom of the inclined surface, but as soon as the backward move takes place, the cam presses against the finger and forces the handle out of engagement. The extreme movement of the handle is limited by the shoulder at the end of this cam piece.

If safety starting cranks are to be considered desirable in automobile work, it then remains to have automobiles so standardized that they can be applied without having to be especially designed for each make of car, not only for the reason that special designs are more costly, but on the further ground that mistakes are likely to creep in every time a new design is encountered, so that having arrived at a satisfactory basis for the safety starting crank, it remains to so design automobiles that it can be attached to them at will without having to redesign either.

The illustrations here afforded were placed at the disposal of THE AUTOMOBILE by William R. Webster, M.E., of Philadelphia, Pa., who is the inventor of the Keystone safety starting crank, and as it is here shown, it represents Alco practice.

Fuel System of Stearns Model 30-60

Some facts in relation to the gasoline storage and the method of feeding it to the carbureter, showing how it is put under pressure and controlled by a float in the auxiliary tank on the dash, so that it feeds to the carbureter by gravity. The carbureter is of the double-jet type, but one float-bowl serves for both nozzles, and the things to do if the carbureter demands attention are discussed.

DESCRIPTIONS of automobiles, while they afford a certain amount of information, general in its character, even so, the purchaser of a car must either be taught by the maker's representative how to manipulate adjustments, if the necessity arises, or technical papers, if they are to be up to a fitting standard, face the necessity of presenting specific information which may be used in the process of tuning up the automobiles. If purchasers can get from makers' instruction books data which will be sufficiently comprehensive to serve the purpose, it will be a good idea for them to do so, but an instruction book will be of no value at all, unless it is carefully read, and with a further understanding that the instructions and the automobile be compared, so that the purchaser will be sufficiently familiar with the situation to warrant him in making an adjustment on the road.

It is not prudent to undertake to adjust the ignition or the fuel system of an automobile in the absence of familiarity and at a distance from home, with the chances of disarranging the system beyond the skill of the owner to further cope with the problem. If a car will run at all, one unfamiliar with the situation will be justified in undertaking the tuning-up process in some place where he can get assistance if necessary; there is a chance that he might by tinkering with the delicate adjustments so derange the power plant that he will fail to make the motor run at all—assistance will then be necessary.

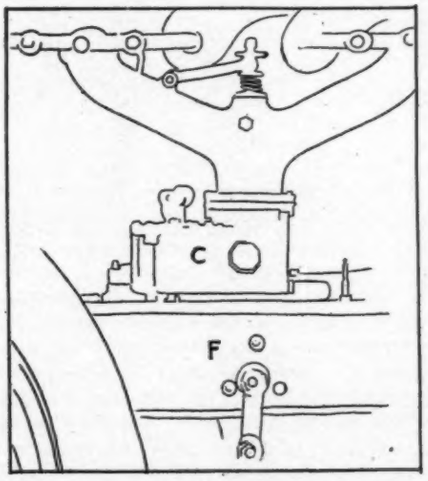


Fig. 1—Carbureter of the Stearns Model 30-60, showing how it is partly below the chassis frame

It would be an ambitious undertaking for a technical paper to present in detail the ignition and fuel system of every automobile made; there are but 52 issues of the paper per year, while of types of automobiles there are upward of 1,000. The great danger in presenting matter to readers lies in giving them too much; it is the old story of the needle in the haystack—there is too much hay. To avoid undue complication, it will be in the path of wisdom to present details of some one system at a time, and even that as briefly as possible.

For this occasion the fuel system of the Model 30-60 Stearns automobile is taken as the subject. Briefly stated, this system comprises:

(A) A gasoline tank located at rear of chassis under pressure.

(B) An auxiliary gasoline tank located on the dash to the right side of the automobile, not under pressure.

(C) A pressure regulator located on the dash under the bonnet just in front of the auxiliary gasoline tank.

(D) A hand pump located on the dash to the left side outside of the oil pump, the two pumps being alongside of each other.

(E) A double-jet carbureter located on the left side of the automobile in a mid-position on the horizontal line of the motor, partially hidden by the chassis frame F, the carbureter being indicated by C, Fig. 1.

(F) Piping which leads from the gasoline tank along the right side of the chassis frame to the auxiliary or dash-tank, which is shown in section.

(G) Piping from the combustion chambers in one of the cylinders of the motor to the pressure regulator, which receives gas under compression.

(H) Pressure pipe leading from the pressure regulator to the pressure side of the gasoline system.

Become Familiar With the Carbureter Adjustments

Referring again to Fig. 1, the carbureter C is placed so low down that it comes behind the chassis frame F for the most part; this was a necessity, due to the fact that the feed from the auxiliary gasoline tank, which is located on the dash, is by gravity. It was stated that pressure is employed for the purpose of feeding the gasoline from the main tank at the rear of the chassis to auxiliary tank on dash. A section of auxiliary tank, shown in Fig. 2, discloses gasoline feed pipe P1, which leads from main tank to filter F, and as the arrows point, the gasoline supply leads into the auxiliary tank T, through a hole in the top, by a needle valve N; if the float is buoyed up sufficiently to press the needle onto its seat, which buoyancy is due to gasoline in the tank, the needle valve will stop off the pressure when the gasoline level is high enough to raise the float to which the needle valve is attached. The gasoline in the tank does not, therefore, have to be under pressure, and it flows by gravity through the pipe P2 out of the bottom of this tank to the carbureter, as shown in Fig. 3, entering at the top of the bowl B, through the fitting F.

The carbureter is of the float-feed type, so that a copper float, which is inside of the bowl B, stops the flow of gasoline from flowing through the fitting F into the bowl just when the level raises to that of the nozzles in the main housing of the carbureter C. This carbureter has two sets of air passageways, P1 and P2, with a nozzle in each, and air openings, shown as circles in Fig. 3. To vary the amount of air which can enter through the circular ports shown:

(A) Back off the wing nuts W1 and W2 of the smaller of the two bowls, which is marked P1, then slide the bottom casting around, noting the extent to which the holes will be covered by the sleeved portion of the lower casting. The sleeve extends up into the casting P1, and has openings in it which register with the openings in the casting P1, but by sliding the sleeve around when the wing nuts W1 and W2 are backed off, the holes will fall away from their registered position and more or less close up the air passages. When the adjustment is made, the wing nuts W1 and W2 must be screwed up tight again to hold it in place.

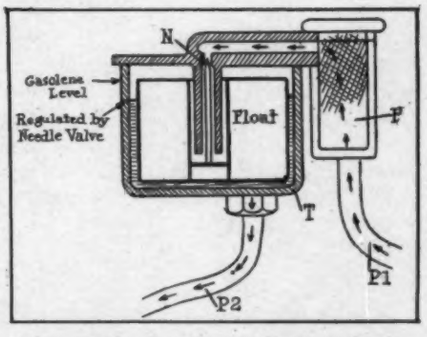


Fig. 2—Section of auxiliary gasoline tank on the dash, and means of limiting the flow of gasoline under pressure by a float.

If it is desired to adjust the air passages of the larger (inside air valve) the wing nuts W3 and W4 (the latter being shown in

dotted lines) should be backed off when the passageways in the casting P2 may be throttled in the manner as described for the smaller bowl P1. The operator will have to exercise some care in making these adjustments, and the wing nuts W3 and W4 must be tightened up again when the operation is completed.

The spring S1 at the bottom of the carbureter C, Fig. 3, controls the automatic air valve on the larger of the two carbureters; this spring is very light; the pressure must be carefully regulated; the weight of the valve is almost sufficient to prevent the valve from opening, excepting at the higher speed, when more air is required in order that the mixture will be in the proper ratio of gasoline to air.

The spring S2 on the carbureter C, Fig. 3, is relatively stout and it is placed to hold the accelerator in the closed position. The lever L1 swings in the direction of the arrow when the accelerator foot pedal is pressed, there being a system of links and rods between the foot pedal of the accelerator and the lever L1 for the purpose of imparting the desired motion. The spring S2 must be adjusted to that strength which will keep the accelerator in the closed position against all the forces which are likely to be brought against it, excepting positive pressure on the foot pedal at the will of the operator.

Of the troubles which are likely to be experienced with the carbureter, the most prolific one may come from impurities in the gasoline; should water accumulate it may be run out of the bottom of the bowl B through the drain-cock D; but should the carbureter flood, the cover T over the float bowl B would have to be taken off, which may be done by backing off four screws. The needle valve seat is attached to the cover and will come away with it. The primer valve is also fitted to the cover and will come off with it. With the cover off, the float bowl will be exposed to view, and the needle valve will be found in a hole in the center of the float bowl; the bowl and the valve may be lifted out and by placing the needle valve in the valve seat member, which is attached to the cover, it will be possible to determine if the needle valve is tight by the simple expedient of pressing it against its seat and blowing through the hole in the fitting F. If the valve is not tight it will have to be ground in. It is also necessary to observe if the priming valve is tight on its seat; if it is not the carbureter will flood. The priming valve has a spring on it, and a fork lever L shaped like a bell crank is placed to lift the timing valve off of its seat against the pressure of the spring. It may be that the fork, which engages a washer on the valve stem, will prevent the valve from seating when the valve is supposed to be closed. If this is found to be true, file away enough of the fork to let the valve seat. If the valve stem is battered up so that it will not make a tight seat it must be ground in. It will be possible to note this condition if flooding continues after the needle valve, which is actuated by the float, is made tight.

Before putting the cover T back, clean out the float bowl. If water is present it will not flow through the sieve in the bottom, and it will have to be absorbed by a clean cloth to get rid of it. This is one of the strange things about fine-mesh sieves, chamois skin, and like filters. If the filter is first wetted with gasoline, water will not then flow through, but if the sieve is first wetted with water, gasoline will not flow through. This odd situation may be carried so far as to say that if part of the sieve is wetted with water and another part with gasoline, water will flow through the part which is wetted by water and gasoline will flow through the part which is wetted by gasoline.

It would be a natural assumption that the length of the needle stem, which is placed in the float bowl and is concentric therewith, will be fixed by the maker so that considering the buoyancy of the float, gasoline will raise in the bowl to the proper level to match with the height of the two nozzles in the respective air chambers. Should this not be the case, the carbureter will either flood or it will stop off the gasoline, tending to "starve" the mixture; flooding would be the most serious difficulty, but this might be overcome by placing this piece of cork on the cross bar which prevents the needle stem from passing clear through the hole in the float. The piece of cork would have the facility of raising the height of the stem so that it would press against its seat were the buoyancy of the float below the requirement. If the float leaks, it will, of course, become loggy and fail to serve its end. In this event the hole must be located and stopped up. This might be done with a soldering iron, but in the absence of one in the kit, a match may be whittled to a sharp point, and after enlarging the hole a little, the match may be screwed in tight. If the match is dry when it is screwed in, it will swell when it becomes gasoline soaked and stay in the hole long enough to let the autoist get home with his car.

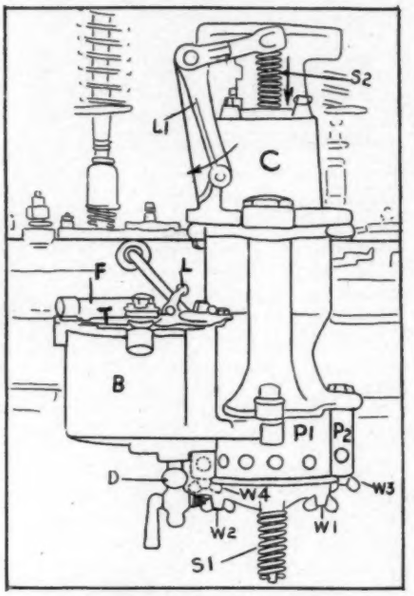


Fig. 3—Carbureter as it would look were the chassis frame removed, with letter references to aid in the discussion.

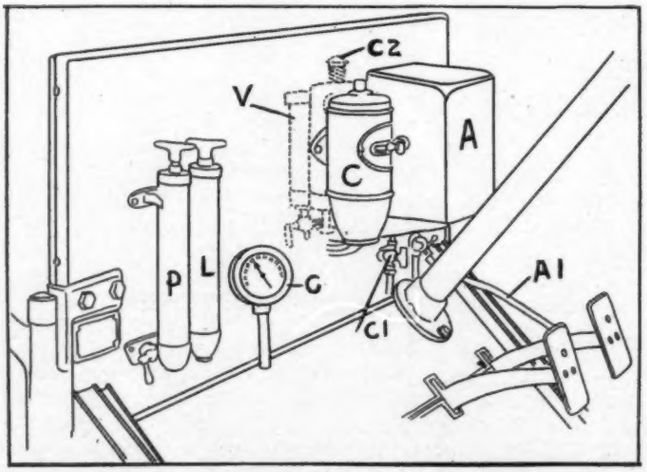


Fig. 4—Dash of the Stearns Model 30-60, showing placing of the auxiliary gasoline tank, pressure gauge, pressure pump, and dash-coil

Become Acquainted With the Dashboard Equipment

Fig. 4 shows the dashboard equipment. A is a mahogany cover over the auxiliary gasoline tank, a section of which is given in Fig. 2. C represents the dash-coil of the Bosch dual ignition system, which was described last week. P is the pump by means of which pressure may be supplied to the gasoline system, and G is the gauge which tells how much pressure is on the gasoline system. V is the automatic pressure valve, shown in dotted lines, it being on the back of the dashboard under the hood, as before stated. A1 is the accelerator foot pedal.

If the pressure on the gasoline system is not sufficient to cause the gasoline to flow into the auxiliary tank A, there will be a shortage of gasoline, but this will be discoverable by opening the cock in the bottom of the tank to see if gasoline flows out. If it does not it will then be known that the tank A is empty. If it is desired to examine the carbureter to the extent of taking off the cover of the float bowl the cock C1 may be closed to shut off the flow of gasoline to the carbureter; if this is not done gasoline will continue to flow through the system out of the

(*Continued on page* 1108)

Automobile Law Chart for States Which Regulate

By XENOPHON P. HUDDY, LL.D.

Gist of the automobile laws of all the States in the Union which regulate the use of automobiles through special laws. The information afforded includes the status of non-residents, the legal speed, equipment required, and penalty imposed for a conviction.

COMPLETE, accurate and up-to-date, this chart of the automobile laws of the various states contains the principal and important requirements with which automobilists should be familiar. In those states where non-residents are exempt from local registration, the exemption applies where the automobilist is duly registered in his home state and when he carries his home state number tags and other credentials. The speed rates are indicated in the chart in numbers only, it being understood that the lowest rates apply to built-up sections of cities and villages, the next rate to sections of municipalities not closely built up, and the highest rate to the open country. Automobiles should, of course, be equipped with brakes and a signaling device. As this is assumed, only the provisions concerning lights are given herein. The penalties stated in the chart are indicated in a general way. Those who contemplate traveling in a state which does not exempt non-residents should write and obtain the necessary license. More detailed information in regard to the requirements of the automobile laws may be obtained by writing to the various officials having charge of registering and licensing motor vehicles.

	Registry	Non-Resident	Speed	Equipment	Penalty
Alabama	Probate Judge, 25c.	Not exempt	8 m.	Brakes & muffler	$20 to $200, 1 to 6 mo.
California	Sec. St. $2	Exempt	10 m. 20 m.	2 white L. forward, 1 red rear	$100 to $250
Connecticut	Sec. St. $6 to $30—h.p.	Exempt 10 d.	25 m.	2 white L. forward, 1 red rear	Max. $500 or 1 yr. or both
Delaware	Sec. St. $5	Exempt	12 m. 20 m.	Brakes and horn	$25 to $100
Dist. Columbia	Auto board $2	Exempt 10 d.	12m. W'sh 20m.O.C.	2 white L. forward, 1 red rear	$5 to $250
Florida	Sec. St. $2	Exempt 30 d.	Reasonable 4m. curves,etc.	2 L.	Max. $100 & imp.
Illinois	Sec. St. $2	Exempt	10 m. 15 m. 20 m.	2 white L. forward, 1 red rear	$10 to $200
Indiana	Sec. St. $1	Exempt	8 m. 15 m. 20 m.	"Lighted lamps"	$50 to $200
Iowa	Sec. St. $5	Exempt	12 m. 15 m. 20 m.	1 white L. forward, 1 red rear	$25 to $50 & imp.
Kansas	No state law	Exempt	10 m. 20 m.	1 or more L. forward	Max. $100
Kentucky	No state law	Exempt	15 m.	1 white L. forward, 1 red rear	$10 to $100
Maine	Sec. St. $2	Exempt	8 m. 15 m.	1 L.	$50, 10 d.
Maryland	Com. M. V., $6 to $18—h.p.	Exempt 7 d. sp. permit	12 m. 18 m. 25 m.	2 white L. forward, 1 red rear	$50 to $500 90 d.
Massachusetts	Mass. High. Com., $5 to $25—h.p.	Exempt 10 d.	15 m. 20 m.	2 white L. forward, 1 red rear	$10 to $100
Michigan	Sec. St. $3	Exempt	10 m. 15 m. 25 m.	2 white L. forward, 1 red rear	$25 to $100 and imp.
Minnesota	Sec. St.$1.50	Exempt	25 m.	2 white L. forward, 1 red rear	Not in auto law. See crim. stat.
Missouri	Sec. St. $5	Exempt 20 d.	8 m. 10 m. 15 m.	2 white L. forward, 1 red rear	$25 to $500
Nebraska	Sec. St. $1	Exempt	10 m. 15 m. 20 m.	1 or more white L. forward, 1 red rear	$25 to $50 and imp.
Nevada	Sec. St.	Exempt	10 m. 15 m. 20 m.	1 or more lights forward	$25 to $50 or imp.
N. Hampshire	Sec. St. $10	Exempt 10 d.	10 m. 25 m.	Lamps	$10 to $50
New Jersey	Com. M. V. $3 to $10—h.p.	Not exempt 8 d. sp. license	12 m. 25 m.	2 white L. forward, 1 red rear	$100 to $200
New York (New law in effect Aug. 1, 1910.)	Sec. St. $5 to $25—h.p.	Exempt	30 m.	2 white L. forward, 1 red rear	$100 and other penalties
North Carolina	Sec. St. $5	Exempt	8 m. 12 m. 25 m.	2 white L. forward, 1 red rear	$50
North Dakota	No state law	Exempt	8 m. 25 m.	2 white L.	$10 to $25
Ohio	Sec. St. $5	Exempt	8 m. 15 m. 20 m.	2 white L. forward, 1 red rear	$25 to $100
Oregon	Sec. St. $3	Exempt	8 m. 25 m.	1 white L. forward, 1 red rear	$25 to $100
Pennsylvania	St. H. Dp. $5 to $15—h.p.	Exempt 10 d.	25 m.	2 white L. forward, 1 red rear	$10 to $200
Rhode Island	Bd. of P. R. $5 to $25	Exempt 10 d.	15 m. 25 m.	1 or more white L. forward, 1 red rear	$200 to $500 or imp. 60 to 90 d.
South Carolina	No state law	Exempt	15 m.	1 white L. forward, 1 red rear	$10 to $150 or imp. 30 d.
South Dakota	Sec. St. $1	Exempt	10 m. 15 m.	White L. forward, 1 red rear	$25 to $50
Tennessee	Sec. St. $2	Not exempt	20 m.	Usual L. equipment sufficient	$25 to $100
Texas	Co. Cl. 50c.	Not exempt	8 m. 18 m.	1 light	$5 to $100
Utah	Sec. St. $2	Exempt	10 m. 15 m. 20 m.	2 white L. forward, 1 red rear	Misdemean'r
Vermont	Sec. St. $1, 75c. h.p. sec. reg., 50c. h.p. 3d reg.	Exempt 10 d.	10 m. 25 m.	1 white L. forward, 1 red rear	$50 or 6 mo.
Virginia	Sec. $2	Not exempt	12 m. 15 m.	1 white L. forward, 1 red rear	$10 or 30 d.
Washington	Sec. St. $2	Not exempt	12 m. 25 m	1 or more white L. forward	Max. $100
West Virginia	Auditor	Not exempt			
Wisconsin	Sec. St.	Exempt	12 m. 25 m.	1 white L. forward	$10 to $25

Tells of Good Roads' Importance

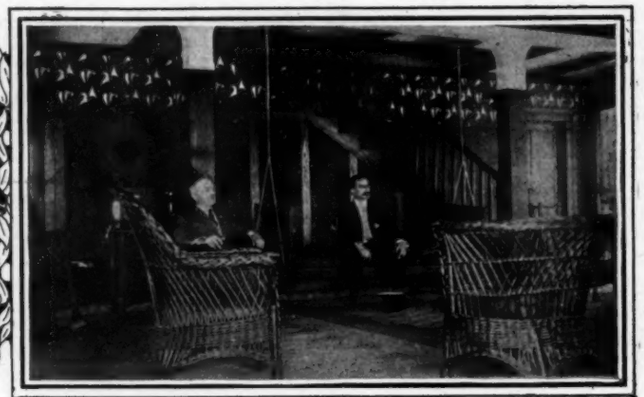
SOUTH BEND, IND., June 13—Three hundred or more good roads enthusiasts, including highway commissioners from every township in Berrien county, prominent farmers and others, met last week in Benton Harbor, Mich., and heard good talks on good roads and the manner of constructing them. The meeting was held under the auspices of the Berrien County Good Roads Association.

Lengthen Course for Grand Prize

On account of urgency and number of requests that have been made of W. K. Vanderbilt, Jr., president of the Motor Cups Holding Company, promoter of the Grand Prize race of the Automobile Club of America, to lengthen the course for the big event, the company has decided to make the course 379.2 miles instead of 278.08, as was announced at the beginning of the season. The race will be held October 15.

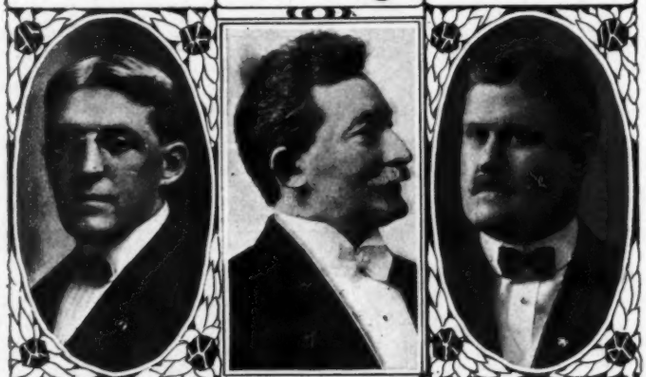
Virile Atlanta Automobile Association

Exterior of Club House



Reception Room

A. G. Candler Jr. | F. J. Cooledge | J. Lee Barnes



J. M. Nye | V. H. Kreighaber | J. J. Woodside

M. R. Wilkinson | E. Rivers | R. J. Guinn

ATLANTA, June 13—Below the shadowy line of Mason and Dixon, that arbitrary boundary which has always carried with it so much of significance and in this day so much of mystery and romance, the automobile club, as it is known in the North and East and West, is practically an unknown quantity save for such shining example as that set by the Atlanta Automobile Association and a very few other similar organizations.

The reason for the scarcity of automobile clubs in a section as rich, potent and progressive as the South, where social organizations and business associations are so notably complete and efficient, is a little obscure until one views the subject from the standpoint of the South itself. Below the Mason and Dixon line the motor car's invasion has been too recent to allow of sufficient time to form real clubs, except in a few instances like the subject of this sketch.

The conservatism of the South is expressed in its club life in speaking terms, as is evidenced by such organizations as the Pickwick and Boston Clubs of New Orleans, the Piedmont and Capitol City Clubs of Atlanta, the Watauga of Nashville and the Pendennis of Louisville, as well as such associations as the world-famed Washington Artillery of the Crescent City. But the vogue of the motor has swept over the South, and as a result here and there organizations of motordom are beginning to make their appearance. One of the pioneers in this line of activity is the Atlanta Automobile Association, which has for its object the advertising of Atlanta through the medium of the splendid speedway that has been installed near the "New York of the South."

The idea that lay at the base of the association was to place the city of Atlanta before the attention of the world. After studious consideration of all the ways and means that would be likely to accomplish this result, the men who are behind the organization decided that a speedway of the highest type would answer the purpose better than anything else, and thereupon they set about securing the land necessary for such an enterprise.

Their preliminary plans showed that 302 acres were required for the track and its buildings and not an inkling of their purpose was allowed to leak out until all the land had been rounded up and irretrievably placed under contract.

The impression was given out that a new cemetery was projected, to account for the purchase of the small farms that constituted the bulk of the desired property. The plan was to hold a race meeting during the week of the first automobile show of the South last fall, and as the movement did not really get under way until May 1, 1909, some extremely quick action was required.

Atlanta is a lively city, a metropolis of its section, but it is only number forty-three in the list of American cities as far as

population is concerned. So it took a high quality of nerve to undertake such a project as that of installing a great speedway. However, the men behind the movement were intensely civic. They figured that if the race meetings made some money, so far so good; but if the balance sheets showed a loss it could be written off against an immense credit of advertising for the city. They were amply able to stand a loss in such a cause.

Securing the land commenced May 1, 1909, and was finished June 10. Bids were asked immediately, but some of the largest contractors in the country declared that the work could not be done in the short time that remained before the dates of the proposed meeting. At last one contractor said he would undertake the job if there was no rock work in the excavation. He was given a free hand and with a giant force of steam shovels, railroad trains and mule and man power he was able to complete the job within the time limit.

Atlanta was full of tourists at the time of the big show and the five-day race meeting, really the opening of the speedway, proved a vast success from every viewpoint. Numerous records were broken and several new world's marks were set. The attendance was enormous and not a life was sacrificed.

This spring the race meeting was not a success, but plans are now being laid to make the coming fall meeting the greatest thing of its kind ever seen in the South.

Stock in the association was offered to the general public, but the response was not of sufficient volume and Asa Candler, Sr., one of the most progressive citizens of the South, dug down into his own pocket to make up the deficiency. The organization contains the names of many of the most prominent men of Atlanta, who have given freely of their time and money to make this enterprise a success.

Aside from the speedway and its appurtenances, the association has a neat little clubhouse, tastefully fitted up for social features. After the recent spring meeting the prediction was made with more or less freedom that the Atlanta Automobile Association was dead. Such was not the case. An absolute loss in any business enterprise is disagreeable, but the men behind the association did not figure it a loss when they were obliged to make up the deficit. They considered such payments merely in the light of liquidating an excellent advertising bill.

But for the coming fall meeting nothing but success can be seen. Everybody is enthusiastic about its prospects and the whole association is working as a man to insure a large and representative entry list and a giant attendance during the races.

It is always refreshing to discover evidence of civic pride and progressive spirit and the motive of this association in making the Speedway project possible may be described as both. The object it sought to attain was wider than the automobile or the city of Atlanta—it was aimed to bring about the general welfare and commercial advancement of the whole of sunny Dixieland. And in passing it may be noted that it has accomplished much in that direction.

The good work done by the Atlanta Automobile Association and the stimulation to motoring given by the Good Roads and Glidden Tours through the South this spring have resulted in much activity in that line. But the honors of the pioneer must be laid at the feet of the enterprising, active and intelligent Atlanta Automobile Association.

Coming Events in the Automobiling World

June 20-July 6	Detroit, Mich., Industrial Exposition, Detroit Board of Commerce.
Dec. 1	Chicago, Ill., First Annual Aeronautical Exhibition in the Coliseum.
Jan. 7-14, 1911	New York City, Madison Square Garden, Eleventh Annual Show, Pleasure Car Division, Association of Licensed Automobile Manufacturers.
Jan. 16-21, 1911	New York City, Madison Square Garden, Eleventh Annual Show, Commercial Division, A. L. A. M.
Jan. 28-Feb. 4, '11	Chicago Coliseum, Tenth Annual National Automobile Show Under the Auspices of the National Association of Automobile Manufacturers, Inc. Pleasure Cars and Accessories Exclusively.
Feb. 6-Feb. 11, '11	Chicago Coliseum, Tenth Annual National Automobile Show Under the Auspices of the National Association of Automobile Manufacturers, Inc. Commercial Vehicles, Pleasure Cars, Motorcycles and Accessories.

Races, Hill-Climbs, Etc.

June 14-30	Cincinnati, Seventh Annual National Reliability Run for Glidden Trophy, Through the Southwest.
June 16-22	Albany Automobile Club, Albany, N. Y., Sixth Annual Tour to Atlantic City and Return.
June 18	Ossining, N. Y., Hill Climb of Upper Westchester Automobile Club.
June 18	Baltimore Hill-Climb of Automobile Club of Maryland.
June 18	Philadelphia, Race Meet, Quaker City Motor Club.
June 25	Port Jefferson, Long Island, N. Y., Hill-Climbing Contest. Automobile Club of Port Jefferson.
June 25-26	Roadability Run, Automobile Club of Philadelphia, to Lake Hopatcong, N. Y.
June 28-30	St. Louis, Mo., Three-day Reliability Run, St. Louis Manufacturers' and Dealers' Association.
July 1-4	Indianapolis, Ind., Track Meet. Cobe Trophy Race—Held on Speedway Track, Chicago Automobile Club.
July 1-10	Los Angeles, Cal., Road Carnival of Licensed Dealers.
July 2-4	Los Angeles, Cal., Speedway Meet.
July 2-4	Wildwood, N. J., North Wildwood Automobile Club, Speedway Races and Club Run.
July 4	Auburn, N. Y., Hill Climb of Automobile Club of Auburn.
July 4	Cheyenne, Wyo., Track Meet of Cheyenne Motor Club.
July 4	Dallas, Tex., Track Meet of Dallas A. C.
July 4	St. Paul, Track Meet of Minnesota State Automobile Association.
July 9	Plainfield, N. J., Hill Climb of Plainfield Automobile Club.
July, Middle of	Richfield Springs, N. Y., Hill Climb.
July, Middle of	Grand Rapids, Mich., Road Race of Grand Rapids Automobile Club.
July 18-23	Milwaukee, Wis., Tour of Wisconsin State Automobile Association for Milwaukee Sentinel Trophy.
July 30	Wildwood, N. J., North Wildwood Automobile Club, Speedway Races and Club Run.
Aug. 1	Minneapolis, Minn., Reliability Run of Minneapolis Automobile Club.
Aug. 3-5	Galveston, Tex., Beach Races, Galveston Automobile Club.
Aug. 4	Algonquin, Ill., Annual Hill Climb of Chicago Motor Club.
Aug. 15	Start of Munsey Tour.
Aug. 17	Cheyenne, Wyo., Track Meet.
Aug. 31	Minnesota State Automobile Association's Reliability Run.
Sept. 2-5	Indianapolis, Ind., Speedway Meet.
Sept. 3-5	Wildwood, N. J., Reliability Run and Speedway Labor Day Race Meet of North Wildwood Automobile Club.
Sept. 5	Wildwood, N. J., Track Meet.
Sept. 5	Cheyenne, Wyo., Track Meet.
Sept. 5	Denver, Col., Road Race, Denver Motor Club.
Sept. 5	Los Angeles, Cal., Speedway Meet.
Sept. 5-10	Minneapolis, Minn., Track Meet at State Fair.
Sept. 9-10	Providence, R. I., Track Meet.
Sept. 10	Los Angeles, Cal., Mount Baldy Road Race.
Sept. 10-12	Seattle Wash., Race Meet.
Sept. 17	Syracuse, N. Y., Track Meet of Automobile Club of Syracuse, Syracuse Automobile Dealers' Association and the New York State Fair Association.
Sept	Chicago, Commercial Car Reliability Contest of Chicago Automobile Club.
Oct. 1	Long Island Motor Parkway, Vanderbilt Cup Race, Wheatley and Massapequa Sweepstakes.
Oct. 3	Louisville, Ky., Reliability Run, Louisville Automobile Club.
Oct. 6-8	Santa Anna, Cal., Track Meet.
Oct. 7-8	Los Angeles, Cal., Speedway Meet.
Oct. 8	Philadelphia, Fairmount Park Race, Quaker City Motor Club.
Oct. 15	Long Island Motor Parkway, Grand Prize, Automobile Club of America.
Oct. 15-18	Chicago, Ill., Chicago Motor Club's 1,000-Mile Reliability Run.
Oct. 20-22	Atlanta, Ga., Speedway Meet.
Oct. 23	San Francisco, Cal., Road Race, Portola Cup.
Oct. 27-29	Dallas, Tex., Track Meet.
Nov. 5-6	New Orleans, La., Track Meet.
Nov. 6-9-13	San Antonio, Tex., Track Meet.

Foreign Shows and Races.

May 1-Oct. 1	Vienna, Austria-Hungary, Automobile and Aviation Exposition.
June 13-18	Scotland, Scottish Reliability Trials.
June 20	French Voiturette Race.
June 21	French Stock-Car Race.
June 22-July 5	Russian Touring Competition, St. Petersburg to Moscow; also Commercial Vehicle Trials.
June 27	Speed Trials at Kiev, Russia.
Aug. 1-Sept. 15	French Industrial Vehicle Trials.
Oct. 15-Nov. 2	Paris, France, Aeronautical Society Show.

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SYRACUSE UNIVERSITY takes rank with the "Hall of Fame"; the learned Chancellor does honor to the occasion, and has a little time to spare for other and needy subjects. The light of intelligence is now focused upon the automobile, and it is claimed that it is not an unmixed blessing; it is charged with being the lure of the idiot who plasters his home with a mortgage in order to possess himself of a modern chariot—an automobile. The astute Doctor will not deny us the privilege of claiming that a man who will exchange a roof over his head for a cheap automobile is not a man who is likely to set the world on fire; yet this is the type of citizen who serves as the model, when the Chancellor wants to pump sense into the heads of the sons of men who are supposed to linger around the Throne of Syracuse and absorb the crumbs of knowledge as they fall from the festive board.

* * *

Phylactery emanating from such high places is loaded down with pollen; it is savored with nectar. Attic salt is at the bottom of it all, and 90,000,000 gaping rustics are expected to read the sign.

* * *

Progress was ever opposed by poverty-stricken thought; it is this form of resistance to the onward march of events that serves as its balance wheel, and compels refinement. It is the very croaking which greets the ear of the delicately poised machine which races into the future that warns us to look well to its mainspring and to profusely lubricate all the working parts; the proprietors of musicless tones, like the comets which fall upon the velvet-like envelope of earth, do more good than harm; they are crisped to dust as they ricochet from billow to billow, but the energy they possess is absorbed by the surroundings, and warmth, which is life, is taken up by the body which receives the blow.

* * *

Antiquity holds in the hollow of its withered hand the foundation of all progress. The first wheel, as it is pictured here, just as it was uncovered in a mummy-pit at Nineveh, 2000 B. C., is the rude prototype of the wheel of the very automobile which causes rare comment to-day. Would the originator of that wheel have listened to progress as it has taken on its present garb? No. The wiseacres who gathered around the throne of the Pharaoh of that day would have pointed out that ruin was concealed in every fiber of a pneumatic tire.

* * *

History justifies antiquity, but the antique has no place in active life—it belongs in a museum.

* * *

Shall we quake with fear because the automobile industry has accumulated force which is worth $500,000,000 per annum? Is progress an asset or a liability? If an asset, is it possible to have too much? If a liability, how comes it that the world has extended such liberal credit?

* * *

Considering the fact that the demand for steel as used in automobile work is 133,000 tons per year at the present time, and that this steel comes from the same hole in the ground as that which goes to make steel rails, knives, baby carriages, and bridges—allowing that mine labor is paid for its hire in either event—what kind of logic is it that says there is danger in mining the raw material for this particular 133,000 tons of steel?

* * *

Remembering that $160,000,000 worth of machine tools are now being utilized in the automobile business; that they would not have been in demand without it; that it took 43,000,000 man-days to build these machine tools; and that money was paid to all this labor—was it imprudent to employ the labor?

Allowing that 40,000 freight cars will be but enough to accommodate a year's output of automobiles during transportation, is it a risk for the railroad companies to furnish them?

* * *

In the plants where freight cars are made labor is employed, and the question is, Were the men in general work, or doing automobile work when the 40,000 freight cars were being made? Just think of it—4,800,000 pneumatic tires are made and used in a single year, all because of the automobile. This small effort requires the expenditure of $100,000,000 or more per year; is it imprudent to pay the cotton growers for their product? Will the negroes in South American wildernesses be hurt physically or morally by the opportunity to earn sustenance? Are the American artisans who make an honest living building tires damaged beyond repair by the money they thus receive?

But the story is not half told; as a small part of the situation, 1,000,000,000 gallons of automobile gasoline are consumed in a year; a small matter of $14,000,000. The question is ripe for the asking: Is Standard Oil money a menace to the community?

* * *

We build roads; what for? In order that automobiles may be used to advantage, and to realize the greatest measure of economy, remembering that the automobile and the road on which it travels constitute the complete conveyance—not the automobile alone. Are the roads, since they are in all truth but a part of the automobiles, wrong to have?

* * *

Is the farmer who uses the road justified in demanding that it be suppressed merely because it is a part of the automobile.

* * *

The building of automobiles, and their use in commercial pursuits, will deprive the farmers of the horse market they have enjoyed ever since women were released from the task of drawing coal out of the mines of Wales and the plow in the fields. Will this be an economic wrong? If so, why was it not wrong to substitute horses for women? We still have quite a few women with us; why allow them to rest in idleness?

* * *

Will the farmers be damaged if farm labor is commandeered?

* * *

Is the farmer so dull that he will not be able to employ the same farm labor indirectly and to better advantage? Is he not clever enough to see that he will get more out of the labor in this indirect way than would be possible directly?

* * *

Is it not true that a laborer can grow more wheat running a lathe in a shop than he can pushing a plow (in the old way) in the field?

* * *

If the laborer proves to be a better man at growing wheat on a lathe—in a shop, so to speak—than he could in the old way, will he not be in a position to purchase more of that wheat for his own use?

* * *

In a word, is money absorbed from other industries by the automobile industry, as the learned are wont to proclaim, when, as a canvass of the situation shows, the building of automobiles adds to the sum total of energy in the world? Energy is made valuable to man in his environment when it is lifted up by activity from the sea-level of inactivity, and placed alongside of other kindred forms of energy.

* * *

Were the automobile a plaything all the energy put into it would be put into play; would there then be too much play? Who can tell? We earn the right to play when we work.

But the automobile is not a plaything; it is the next step on the great stairway of human progress. Let us climb down the stairs of progress right now, and learn, perchance, wherein the error, if one there is, lies.

6000 to 4000 B. C.—Medians, Persians, Assyrians and Egyptians managed to drag burdens placed across the forked branches of a felled tree.

5000 to 3000 B. C.—The same peoples built sledges and rolled them on logs. Tiles show funerals with white oxen drawing the corpse on these conveyances.

4000 to 2000 B. C.—The Egyptian **plaustrum** is a cart on two solid wheels, drawn by horses.

2000 to 1000 B. C.—The Scythians, being nomadic, placed their huts on wheeled platforms and toured through Asia Minor.

Homer describes Juno's carriage by its "whirlwind wheels on iron axles, each with eight brass spokes."

1000 B. C. to our era.—Plinius reports that the chariot on four wheels came from the Phrygians before Rome was founded.

The oldest Roman vehicle, the **arcera**, mentioned in the Twelve Tables, was an ambulance.

Solon, the founder of Grecian law, ordered that no good woman should leave her house at night, unless in a carriage lighted by torches.

Cæsar went from Rome to Gaul in one week by relay coaches, but he issued an edict ordering moderation in the luxurious equipment of the litters employed by ladies.

The Etruscans are credited with the introduction of hoods for chariots.

0 to 300 A. D.—At the beginning of the Roman Empire the four wheeled carrucca, with seats for two only, was the gala vehicle. The driver sat in front and lower. This word is the origin of "carriage." The **pilentum** was an open city carriage for matrons. It had a canopy on four slim posts worked in gilt bronze, ivory or rare woods. Young girls sat in highly ornamented litters covered with drapes. Only women of bad reputation were prohibited by law from using conveyances of any sort. The **carpentum** looked like a richly carved baker's delivery wagon, and was drawn by two horses tandem when used by women, by four horses when used by men. It had either two or four wheels. The Roman **cisium** was a cabriolet hung by leather straps.

Middle Ages.—In the ignorance and poverty of the Middle Ages the use of vehicles languished. The use of leather straps for suspension was forgotten. Only the **thensa** survived. It was a two-wheeler used by the Romans for transporting the images of the gods, and was built in imitation of temple style, with columns, pilasters, etc. It was used for wheeling the images of the saints. Later all sorts of rough carts reappeared.

1294 A. D.—Philip of France made a sumptuary law prohibiting plain citizens from using carriages. Pope Gregory possessed a **caretta**, looking much like a prairie schooner. It was drawn by two horses tandem. Richard II. of England and some of his friends had **whirlicotes**.

1554 A. D.—Queen Mary went to coronation in a canopied chariot. The English sedan chair of 1581 was on wheels and much like a push chair for invalids. This century saw the introduction of leather braces again, the innovation coming from Hungary. Ladislaus of Hungary sent such a carriage as a present to Charles VII. of France.

1650 A. D.—Glass windows were introduced in French carriages.

1670 A. D.—Steel springs were introduced at about the same time in France and England. Charles II. formed the first Coachmakers' Company in 1677. A pamphlet was published in France extolling the virtues of carriages as against those of sedan chairs. **Cabriolets** came in 1672 from Florence, Italy. **Postchaises**, looking like sedan chairs on wheels, came at the end of this century.

1670 to 1700 A. D.—On the Continent the **Berlin** was the favorite type. It was a coupé sitting on the middle of long poles or springs reaching from front to rear wheels. The high driver's perch came in use through the **chariot à l'Anglaise**, at the same time as the landau, which looked like a modern coupé, but could be opened.

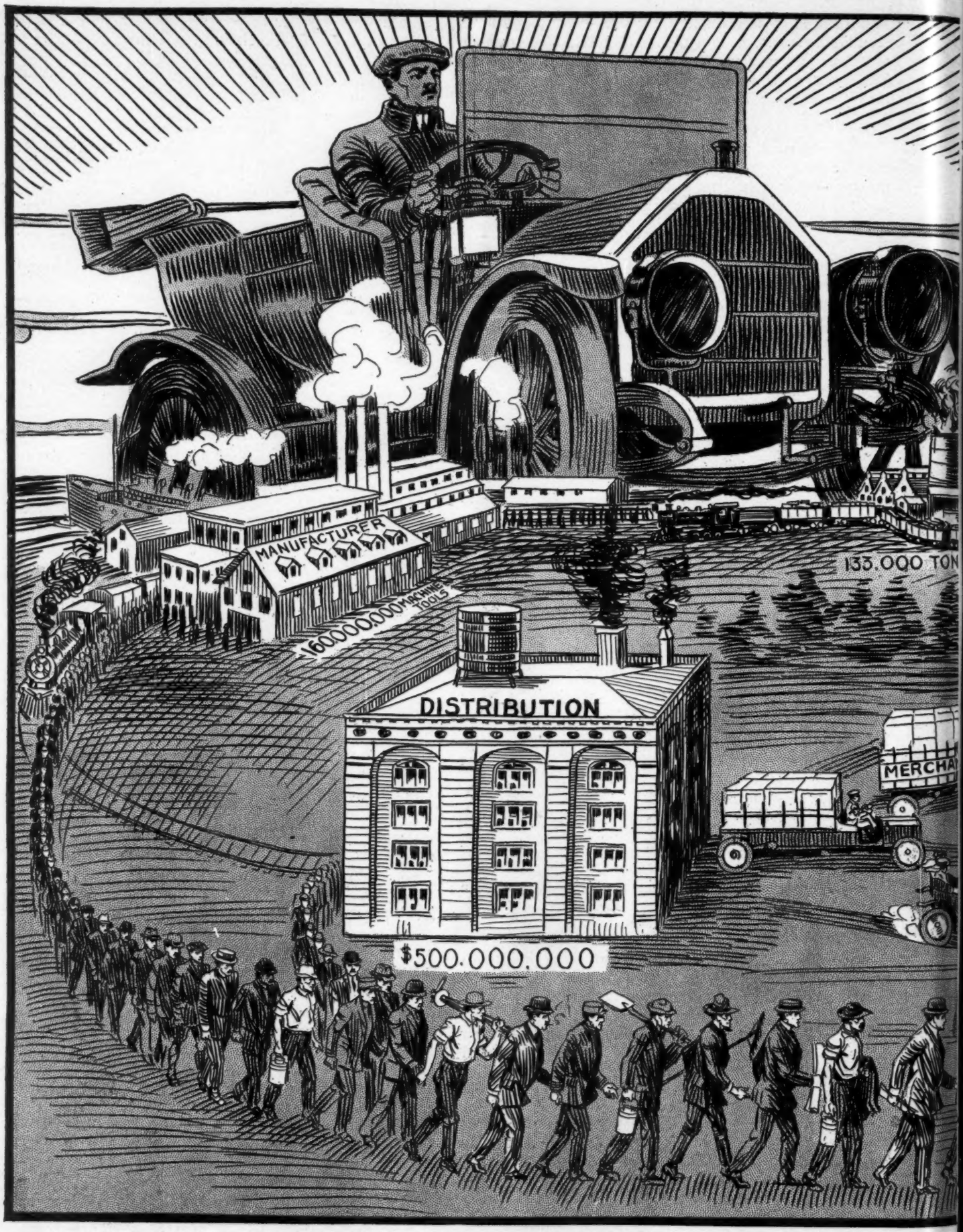
18th Century.—The high perch **phaeton** was used by young bloods of the George III. period. The **briska** was on C springs with leather straps and remained in fashion into the early Victorian Era.

1804 A.D.—Obadiah Elliot patented elliptical springs. Napoleon's campaign carriage had bedroom and library and was a real military touring car drawn by two or four horses, sometimes by six.

1834 A. D.—The hansom was patented by Hansom of England.

With these dates available, which are offered to facilitate matters, it is hoped that the wise will point to the particular epoch back to which we are to go in quest of safe and sane finances, counting as the cash-box relates to methods which eliminate burdens that weigh down the part of the human race which is least able to resist. But why should idle cash be the gauge by which active men are to regulate effort; is the right to produce limited by the belief that money may spread out too thin in satisfying demand?

From an Egyptian Mummy Pit, 2000 B. C.



THE HOME, WHICH IS THE UNIT, IS MAINTAINED IN COMFORT AND SECURITY THROUGH

THE GOD OF THEIR IDOLATRY. —— SACRIFICE OFFERINGS TO THE GASOLENE CHUGGERNAUT.

NTELLIGENT EFFORT, OF WHICH THE AUTOMOBILE IS ONE OF THE BEST CREATIONS

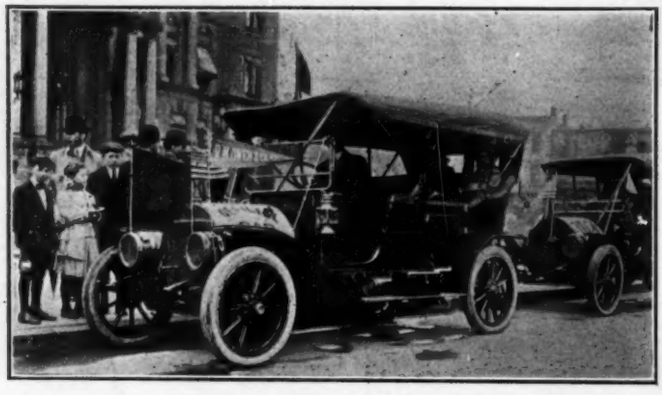
Two Hundred Cars Participate in Premier Roadability Run

PHILADELPHIA, June 13—Two hundred cars participated in the second annual roadability run of the local Premier representatives to Cape May on Saturday afternoon last. Of these, fully two-score came from New York, the itinerary of the latter contingent including a return trip as escort to the contestants in the Atlanta-New York Good Roads Run, who arrived here from Gettysburg yesterday. On the trip to Cape May, additional Premier cars joined the procession at Vineland, Bridgeton, Cape May Court House, and other points, and when the big line swung into Cape May there was much enthusiasm along the route to the big Hotel Cape May, the official headquarters.

Allen Shelden, president of The Motor Company, local Premier agents, was the host of the occasion. The mayors of this city and of Camden were among the guests.

The New York contingent left the metropolis on Friday morning, and had a veritable mud plug across Jersey to this city. The Gotham section was under the direction of R. M. Owen & Co.

There was a grand parade of all the cars in Cape May on Saturday night, and much red fire was set off to celebrate the occasion. A grand ball wound up the festivities, after which the prizes were distributed to the winning drivers. The Boards



Official Car of the New York Premier Contingent

of Trade of several of the larger towns along the route hung up cups for the car whose time most nearly approached the secret official figures established for the run to their respective cities—these in addition to the main trophies. Those who won these various cups and trophies were:

L. W. Mulford, of Narberth, Pa., the Vineland trophy. Official time, 99 minutes; actual time, 99 minutes, 10 seconds.

W. J. Hendren, of Manayunk, the Bridgeton trophy. Official time, 175 minutes, 44 seconds; actual time, 175 minutes, 24 seconds.

Benjamin J. Carroll, of Philadelphia, the Port Elizabeth trophy. Official time, 232 minutes, 36 seconds; actual time, 232 minutes, 40 seconds.

George Thompson, of Philadelphia, the Bellevue Hotel of Court House prize. Official time, 313 minutes, 34 seconds; actual time, 313 minutes.

C. H. Clinton, of Philadelphia, and L. N. Shakespeare, of Haverford, tied for the Cape May Hotel prize, the main trophy, each negotiating the route in the same time—365 minutes, 31 1-2 seconds; the official time was 365 minutes, 30 seconds.

John C. Cave, of Philadelphia, the Board of Trade prize. His time was 365 minutes.

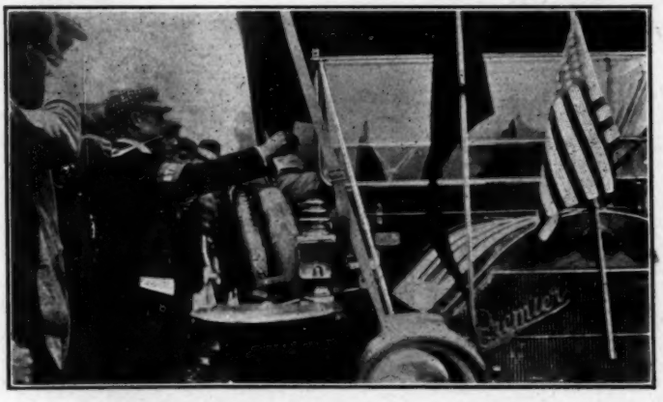
This morning the New York Premier brigade followed the Atlanta-New York tour to the metropolis.

One peculiar feature of the run was that the weather, which in other not distant sections of the country caused the abandonment of several important events, was most delightful. When the

Line-up on 59th Street, New York, Before Start

tourists arrived at Cape May the sun was in evidence and had been for the greater part of the day.

Allen Shelden, the director of the run, who was largely instrumental in inaugurating the annual outing, was complimented for the thorough preparations he had made for the entertainment of the more than 750 guests who composed the party. Fully two-score newspaper men were included in the number, no less than 10 cars being detailed to carry the writers.



New York Premierites Checking Out at Jersey City

News Notes from the Kentucky Metropolis

LOUISVILLE, KY., June 13—The first run of the season was held here on June 2 under the auspices of the Louisville Automobile Club, when Louisville motorists toured to Frankfort to witness the dedication of the new State capitol. The start was made at 7 o'clock in the morning near the entrance to Cherokee Park, where the cars had assembled. Roads between the two cities were in splendid condition.

Reo Plant to Be Greatly Enlarged

LANSING, MICH., June 13—Another expansion of the Reo Motor Car Company, both in the variety of the output and in the size of the factory, is in prospect. Portions of the old Bement plant, recently purchased from the Detroit Trust Company by R. E. Olds, are to be used as an auxiliary plant for the production of automobile trucks. Two styles of trucks will be turned out this year, one a light delivery wagon for laundries.

Knox Cars Star in Giant's Despair Hill Climb

WILKES-BARRE, PA., June 14—The Knox contingent captured the real honors in this afternoon's postponed hill climb on Giant's Despair. Not only did Fred Belcher in the 40-horsepower Knox runabout land the second leg on the $1,000 Hollenback trophy, but he won the event for cars of 301 to 450 cubic inches displacement with the same machine, and Louis Disbrow captured the 451-600 cubic inch event with the "Knox Giantess," in 1:47 2-5. Besides these wins, the Knox brigade landed third in the free-for-all, second in the consolation, and a similar position in the over-$2,000 member's race.

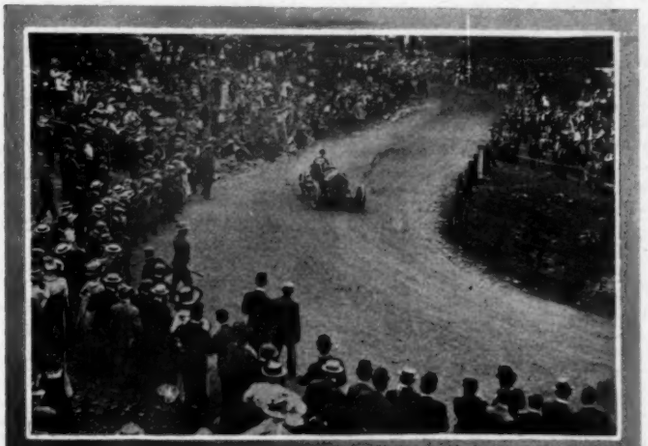


Fig. 1—Marion, driven by Habblett, winning the first club event
Fig. 2—"Knox Giantess," Disbrow driver, won 451-600 race
Fig. 3—Chadwick, Zengle, winner of the Consolation Cup

Fifty thousand people cheered when Ralph DePalma, driving his big 200-horsepower Fiat, established a new record for the hill in the free-for-all. The new mark that he set is 1:28 2-5 for the 5,700-foot course, which has grades which at places are as great as 22 per cent. and sharp and dangerous curves at the Devil's Elbow, the Mountain House and the S turn beyond. He was the choice of the people for the record-breaking, owing to the power of his machine, and the crowd showed its appreciation when it learned that he had lowered the record 3 1-5 seconds.

The largest crowd that ever witnessed a climb up the hill lined the course. Automobilists came from all sections of eastern Pennsylvania, lower New York State and northern New Jersey and thousands of machines were parked on the mountainside.

The free-for-all was the event of the day and twelve cars entered it. The Fiat, conceded to be the winner, proved that the judgment of throng was right, while the Chadwick, driven by Len Zengle made great time up the hill and took second place in 1:37, the "Knox Giantess," with Disbrow at the wheel, was a little more than eight seconds slower and won third place. These two cars also maintained their respective positions in the invitation event, a sort of consolation for the drivers who did not win in the free-for-all, and from which the champion Fiat was barred. Zengle took first place in the invitation by daring driving around the sharp curves and by getting great speed out of his car in the straightaway, making the climb in 1:37 3-5, practically the same time as he made in the free-for-all, while Disbrow, with the "Knox Giantess," got to the top in second place in 1:44 3-5. A Matheson Six car won third place.

The famous Hollenback $1,000 trophy was won by Fred Belcher, who drove a Knox runabout, and who went up the hill like a demon, striking the curves with great speed and bounding over the steep finishing stretch to the top in 1:53 2-5. A Knox car also won the event last year, and if a Knox wins it again it will become permanent owner of the trophy. The Knox people took a large space of the prizes for the day too, getting three firsts out of nine events, two seconds and a third. In the Hollenback the Matheson Six car, which Wilkes-Barreans so earnestly hoped would win as it is manufactured here, took second place in 2:00 4-5, while Kincaid's National "40" was third.

STOCK CHASSIS, 161 TO 230 CUBIC INCHES

No. Car	H.P.	Driver	Time
1—Oakland	40	H. A. Bauer	2:17 2-5
2—Reo	30	Frank Martz	2:21 1-5
3—Maxwell "T"	30	T. M. Costello	2:55

STOCK CHASSIS, 231 TO 300 CUBIC INCHES

1—Marmon "32"	32	Ray Harroun	1:50 1-5
2—Pope-Hartford	40	Robt. Johnson	2:05
3—Pullman	28	H. P. Hardesty	2:05 2-5

STOCK CHASSIS, 301 TO 450 CUBIC INCHES

1—Knox	40	Fred Belcher	1:52
2—Marmon	32	Ray Harroun	1:54
3—National	40	John D. Aitkin	1:54 2-5

STOCK CHASSIS, 451 TO 600 CUBIC INCHES

1—Knox Giantess	48	L. A. Disbrow	1:47 2-5
2—National	40	John D. Aitkin	1:55
3—National	40	R. Wilcox	1:58 2-5

STOCK CARS, $2,000 TO $3,000, FULLY EQUIPPED, FOR HOLLENBACK TROPHY.

1—Knox Runabout	40	Fred Belcher	1:53 2-5
2—Matheson Six	50	Guy Renolds	2:00 4-5
3—National	40	Thos. Kincaid	2:01 2-5

GASOLINE CARS, FREE-FOR-ALL

1—Fiat	200	Ralph De Palma	1:28 2-5
2—Chadwick	60	Len Zengle	1:37
3—Knox Giantess	48	L. A. Disbrow	1:45 4-5

GASOLINE CONSOLATION RACE

1—Chadwick	60	Len Zengle	1:37 3-5
2—Knox Giantess	48	L. A. Disbrow	1.44 3-5
3—Matheson Six	50	John Turner	1:48

CARS UNDER $2,000, WILKES-BARRE CLUB MEMBERS ONLY

1—Marion	40	Edward Habblett	2:19 2-5
2—Maxwell "Q"	22	M. S. Donnelly	2:46
3—Maxwell "T"	30	W. C. Moore	3:05 2-5

CARS OVER $2,000, WILKES-BARRE CLUB MEMBERS ONLY

1—Matheson Six	50	John Turner	1:46 2-5
2—Knox	38	Fred Belcher	1:51 1-5
3—National	40	John D. Aitken	1:52

Hamilton Beat Express Train to Philadelphia

Traveled 175 Miles Through the Air

Hamilton flew from Governor's Island, New York, to Philadelphia—Returned the same day—Weight was 74 pounds more than Curtiss was encumbered with in his flight from Albany to New York City—Hamilton had some ignition trouble in his return trip—He descended at South Amboy, N. J., on way back and splintered the propeller—New York Times and Philadelphia Public Ledger put up the prize—Public speculating as to the future of the aeroplane.

TRAVELING 175 miles through air, Charles K. Hamilton sailed from Governor's Island, in New York harbor, to Philadelphia and return in safety Monday. He used a Curtiss biplane of the same general character as that in which Glenn Hammond Curtiss recently flew from Albany to New York, but which, it was announced, weighed 74 pounds more than the machine used by Curtiss.

Hamilton's trip was accomplished without an untoward incident until he had nearly completed it, when ignition troubles in two of his cylinders caused him to descend in a swamp-meadow near South Amboy, N. J., where in making a landing he splintered one of the blades of his propeller and was obliged to make extensive repairs before continuing his voyage to the starting point.

This, however, was done after considerable delay and the aviator scudded across the Jersey lowlands and out over the broad reaches of New York harbor in the gathering gloom, reaching Governor's Island just before the lowering clouds and the darkness of night closed in upon him.

The trip was a record-breaker in some respects. It was the first round-trip ever undertaken with an aeroplane between two big centers of population. It involved passing over heavily populated areas, covered with large buildings which produce air-currents and eddies likely to disconcert the aviator. It all seemed ridiculously easy and simple until the very moment when vast crowds assembled about bulletin boards all over the country were ready to cheer the announcement of the successful completion of the flight. Then came a delay that lengthened into minutes and for nearly two hours no word of a definite character was received from the air sailor.

Even those who promoted the flight did not know what had become of Hamilton and his machine and all sorts of rumors were afloat as to their fate. Then came the news of the descent in the Jersey swamp and something like a groan of sympathy arose all over the land.

The start was scheduled to take place at 7 o'clock in the morning from the "made-ground" on the south side of the island and in spite of hazy weather conditions that promised rain and, perhaps, wind later in the day, Hamilton completed all his arrangements, and a few seconds after 7 o'clock gave the signal to let go. With a rush the machine started, but in tilting to leave the earth, the wooden propeller caught upon a stake and one of the blades was splintered beyond repair.

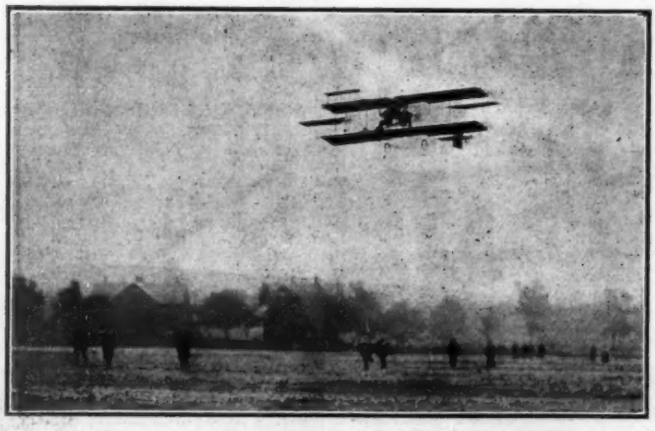


Fig. 1—Starting from Governor's Island on the long flight to Philadelphia

Glenn H. Curtiss volunteered to lend Hamilton the propeller that he had used in his Albany-New York flight, and in half an hour the aeroplane was ready for the trip, equipped with the Curtiss propeller. At 7:36 the actual start was made and the biplane rose gracefully and sailed toward the Statue of Liberty on Bedloe's Island. Then the aviator swerved to the right and crossed the bay in the direction of South Elizabeth.

Vast throngs lined every available point of vantage to get a glimpse of the aeroplane, the route being black with humanity practically all the way to Philadelphia. At an elevation of from 400 to 1000 feet or more, the out-bound trip was made with surprising steadiness. Rahway, Metuchen, New Brunswick, Monmouth Junction, Princeton Junction, Trenton, Bristol and Holmesburg Junction were passed in order and at 9:26 o'clock Hamilton swooped down upon the spot selected for his landing within the precincts of Philadelphia. Before he came to the ground, the aviator gave an extra exhibition of his facility in handling the machine, circling the field and dipping and rising at will amid the stunning applause of 100,000 persons.

Fig. 2—After the involuntary descent near South Amboy; carrying the plane out to a road

The landing was made without accident, the flying time for the trip of 86.1 miles being 1 hour and 50 minutes.

The aviator delivered a message of greeting from Governor Hughes to Governor Stuart, of Pennsylvania, who was among the first to congratulate the young air sailor on the success of his daring trip. In return he was charged to deliver a message from the Pennsylvania and Philadelphia authorities to Mayor Gaynor, of New York, and the New York State officials.

Hamilton announced that he would start on the return trip within an hour and tore himself away from his host of admirers long enough to provide himself with a cup of coffee and some light refreshments.

In speaking of the first part of the trip he said that it had been without incident practically all the way, but that when he was approaching Philadelphia he noticed that one of his cylinders was missing fire. The motor was pretty well warmed up and gasoline and lubrication supplies were low. Hamilton complained that the quality of his oil was not exactly right and sub-

sequent events showed that the trouble he experienced with foul sparkplugs might be chargeable to that fault.

It was a little over two hours before the aviator was ready to commence the homeward bound flight, and with his machine in apparently perfect condition Hamilton took his seat and gave the signal to start at 11:33 o'clock.

A mighty cheer greeted man and machine as the powerful engine gathered headway and rose above the heads of the crowd, turning to the right to pick up the Pennsylvania Railroad tracks.

The man-bird rose higher than on the first stage of the trip and settling into a fast pace shot northeastward toward the metropolis. Passing Bristol Hamilton threw out a number of peace-bombs, paper projectiles intended to demonstrate the efficiency of the aeroplane in times of war. These little packets rattled down about the heads of the spectators and gave significant promise of what might be the result of that variety of warfare in the next great campaign.

If the crowds were dense on the out-bound trip, those that stood and waited for a sight of Hamilton and his machine on his return voyage were of vastly greater proportions. It is safe to say that there has not been so much excitement in Trenton, the capital of New Jersey, since that Christmas Day about 135 years ago when Washington crossed the Delaware river and surprised the Hessians in their beds. Over the spots where the Hessian mercenaries had their camps and batteries Hamilton strewed another installment of peace-bombs, showing how much easier it would be for him to destroy a hostile army, single-handed, than it was for Washington to accomplish the same result by the

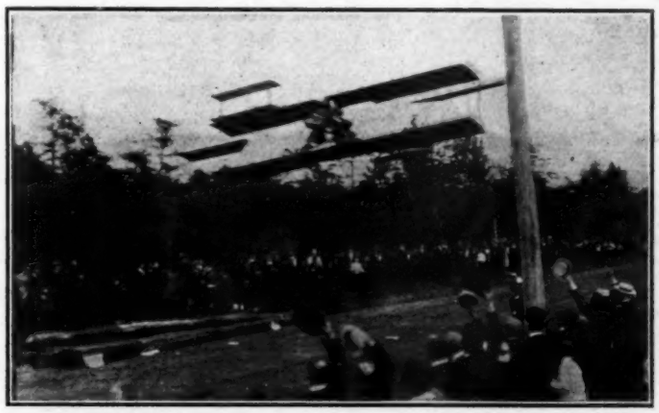


Fig. 3—Near a wood, ascending to clear the trees and to make time

military achievement that stands in history as one of the most astonishing feats of any war.

Shooting past Princeton Junction, within sight of the historic university, the aviator took to the meadows south of the railroad tracks and with a sparkling burst of speed moved straight and steadily as far as Metuchen. It was a few miles back that Hamilton first noticed that a cylinder of his engine was missing again, and as he passed over the city he discovered that even with full throttle he could not get an explosion from that cylinder. In a moment another cylinder began to act badly and the aviator curved away from the railroad and was lost to sight over the Jersey lowlands and tidal flats. He found that it was doubtful if he could retrace his course on six cylinders and started to make an airline shoot toward Governor's Island before his power failed.

The sooting of his sparkplugs proved to be too serious, however, and the aeroplane sank lower and lower under the slackened power until the aviator was forced to make a landing. Some distance ahead of him, and in a territory with which he was not familiar, Hamilton discovered what seemed to be a grassy meadow, flat as a board and without obstruction of any kind. With a last effort he applied all the power his dirty motor could generate and, setting his gliding planes, shut off power and came down. The landing was made in a grass-covered swamp that looked like a meadow from above but which in reality was knee-deep in water and mud. The tough swamp grass searched the machinery, and when the aviator tried to disentangle it he found the propeller jammed so hard at its bearings that it became disabled. In a short time assistance came for man and machine and soon the aeroplane was lifted and carried to dry ground.

Messages were sent to Hamilton's family and the officials at Governor's Island and with all despatch another propeller was started toward the scene of the mishap. This arrived after several hours of unavoidable delay and was installed by a force of volunteer mechanics. With his sparkplugs clean once more he managed to make the final ascent of the trip, clearing the trees and crowds and rising only high enough to avoid the obstacles. The rest of his trip was without special incident.

The distance traveled on the return trip was 88.9 miles. The full distance of the round-trip was 175 miles. He started at 7:36 o'clock in the morning and returned at 6:40 o'clock in the evening. His flying time was 3:34, or an average of a little over 49 miles an hour for the entire flying time. On the outward trip he averaged 46.92 miles and on the return 51.36 miles an hour.

The flight was the result of an offer of a big prize by the New York *Times* and Philadelphia *Public Ledger* for a flight between the cities.

Technical Angle of the Hamilton Flight

Mr. Hamilton's flight from New York to Philadelphia and return was made possible by favorable weather and it was interrupted, it is said, through the sooting up of a sparkplug. Are any inferences to be drawn from either the substantial success of the trip or from the little incident which marred it toward its close? According to the best information, the fracture of a propeller blade, which also delayed the returning aviator, was due to unskilful handling of the machine by outsiders after it had landed. The distance of the flight and the time the machine was in the air have no bearing on design or construction, if it is assumed that the weather was uniformly propitious, but they do relate to motor construction or motor operation, owing to the thermic factors which enter at this point. It is usually conceded that sparkplugs very rarely give out under the best motor conditions. Poor lubricating oil would affect all the sparkplugs alike, unless the thermic conditions in one cylinder differed from those in the other cylinders. The inference would be that the motor was operated too close to the thermic limits, and that one cylinder, for some minute reason ultimately due to this general cause, developed so much heat as to "crack" the lubricating oil, preventing its complete combustion. A contributory cause to this effect would be the extra weight carried, in the form of a large gasoline supply. This compelled the aviator to use a high tilt, and the desire to make speed with high tilt compelled the operation of the motor at a high development of power, at which any imperfections in its thermic action and the efficiency of the cooling provisions would be accentuated.

Fig. 4—Greetings between Hamilton and his mother, with sympathetic onlookers

Owing to the persistent rain, the Oldsmobile owners' reunion at Empire City race track Saturday was smaller than its indications promised when all the plans had been completed. About 200 cars paraded from Olds headquarters at Fifty-first street and Broadway to the track where the exercises were to have been held. A. C. Stem proved the winner of the automobile offered free to the holder of the ticket drawn last from a secret receptacle. Aside from luncheon and the running of a foot race, the original program was not followed. The six races carded for the afternoon's sport were called off and the prizes, consisting of silver cups and blue ribbons, were awarded by lot

Society of Automobile Engineers Adds Members

Coker F. Clarkson, General Manager of the Society of Automobile Engineers, this week announced the election of the following new members of the Society: David Dwight Rowlands, Rider-Lewis Motor Car Co.; Clarence W. Spicer, Spicer Manufacturing Company; Christian Girl, Perfection Spring Co.; Arthur Holmes, H. H. Franklin Manufacturing Co.; Marcus Thompson Lathrop, Halcomb Steel Co.; Henry C. Wilson, Sub-Target Gun Co.; C. E. Reddig, Columbia Motor Car Co.; Joseph P. Lavigne, Lavigne Mfg. Co.; Edward R. Hewitt, Hewitt Motor Co.; Tracy Vere Buckwalter, Pennsylvania Railroad; H. P. Dodge, Ohio Electric Car Co.; H. C. Colburn, Colburn Automobile Co.; Irving W. Adams, High Frequency Ignition Coil Co.; John A. Mathews, Halcomb Steel Co.; W. H. Cameron, Willys-Overland Automobile Co.; Charles Archibald Ward, Pittsburg Motor Car Co.; Lars G. Nilson, Nilson-Miller Co.; Hugo C. Gibson, Requa-Gibson Co.; William Fleming Abel, Halcomb Steel Co.

Boston Show Dates; New Car Plant

BOSTON, June 13—Boston's next motor show will be held during the week of March 4-11, 1911. This was one of the things decided at the meeting of the Boston Automobile Dealers' Association. The election of officers resulted as follows: J. M. MacAlman, president; J. S. Hathaway, vice-president; F. A. Hinchcliffe, treasurer; Chester I. Campbell, secretary; directors, J. W. Maguire, E. A. Gilmore, F. E. Wing, C. F. Whitney, Charles E. Fay, A. P. Underhill and the officers named above. Mr. Campbell was chosen manager of the show.

Plans for the Orson plant, at Springfield, are rapidly crystallizing. It is stated that some $75,000 worth of machinery is on the way in addition to the big shipment already received. It is said that the first car will be finished sometime in July. From what has been given out, it is claimed that the Orson will have no less than 45 ball bearings; have mechanically oiled-valve stems; one-piece housing for the steering gear and some other features that will be entirely new. The horsepower is not stated. Nor has it been intimated what its makers may do relative to the Selden license.

H. B. Layman, formerly with the Packard, Winton, Alco and Ruttenburg plants, is president and general manager, with J. E. Davey, formerly with the Locomobile Company, as factory superintendent. Among the men interested in the car as stockholders, it is said, are W. K. Vanderbilt, Jr., Henry O. Havemeyer, Jr., James Stillman, Percy Rockefeller, Richard Sutro, Charles Gates and other well-known New York bankers. E. C. Kilbourne, of Springfield, a brother of Vice-Pres. H. M. Kilbourne, of the City Bank in New York has been named treasurer of the new concern.

Central Ohio News Features

COLUMBUS, O., June 13—An elaborate system of parks and boulevards is projected by the residents of East Columbus; consequently plans by which to meet the expense of the improvement are now being made. Property owners along Alum creek have been asked to donate enough ground for the desired drives. The matter of improvement has been discussed for some time without obtaining results. Finally, an Improvement Association was formed, with O. A. Miller as president, Dennis Kelly, George Hardy, C. E. Richards and others as officers. It is proposed to raise $25,000.

At a special meeting of the Athens Automobile Club, held recently, the working committees for the coming year were appointed as follows: Laws and Ordinances, C. D. Hopkins; Grievance, H. D. Henry; Streets, Roads and Signs, A. A. Wolfe; Runs and Tours, F. B. Phillips; Membership, W. F. Mercer; Auditing, F. L. Alderman. Six new members were received into the club. Arrangements will be made for a number of club tours.

The Al-Ton Motor Accessory Company, Akron, O., was incorporated with a capital stock of $50,000 to make and deal in motors and motor parts. The incorporators are Clyde S. Pelton, H. T. Maranville, Edward W. Brouse, C. H. Maranville and Harry William.

The Perfect Tire Company, of Cleveland, was incorporated with a capital stock of $50,000 to make automobile tires and motors, and to deal in automobile parts. The incorporators are M. J. Kirby, William Eynon, Walter C. Eynon, W. A. Mayer, Frank L. Smith and Jacob Boeple.

The Charles Schiaer Motor Car Company, of Columbus, O., has taken the Central Ohio agency for the Everett. The territory includes about fifty counties in Central and Southern Ohio.

If plans which are under way are carried out Akron will have another large concern for the manufacture of automobile tires as well as rubber goods of every description. The Portage Rubber Company, of Akron, incorporated some time ago with a preliminary capital of $10,000 is the nucleus for the concern. Steps were taken recently to increase the capital stock to $1,000,000 and a board of directors was elected consisting of William Christy, John Kerch, John W. Miller, Judge Dayton, A. Doyle, A. S. Mottinger, James Christy, M. S. Long and H. A. Kendall, the latter of Cleveland.

A number of sites for the erection of the plant are under consideration and a deal will likely be closed in the near future. It is the intention to start the erection of the plant as soon as possible. At the start 300 men will be employed.

The annual outing given by the Diamond Rubber Company, at Akron, to its thousands of employees took place Saturday, June 11, at Silver Lake Park. Between 10,000 and 12,000 attended the affair.

News Mems. from the Missouri Metropolis

ST. LOUIS, June 13—The route for the three-day run of the St. Louis Manufacturers' and Dealers' Association on June 28-30 has been selected, and details for the contest are fast being completed. The run will be from St. Louis to Hannibal for the first night's control, from Hannibal to Mexico, Mo., for the second night's control, and from Mexico to St. Louis the third day. The distance is approximately 400 miles. The tour covers one of the best parts of Missouri. Originally it was planned to cross the river from Hannibal into Illinois, but the Buick pathfinding car demonstrated that the contemplated route was too long for a three-day run. The honor of being the first entrant and obtaining position No. 1 fell to the Lindsay Motor Car Company, which entered an Interstate car. There will, it is expected, be from 60 to 70 cars in the run. The numbers will be assigned according to the priority of the entry. The small numbers have the advantage, of course, of being the first to start in their order from each control. The Contest Committee, consisting of F. R. Tate, John H. Phillips and Charles E. Michel, has formally announced the appointment of J. D. Perry Lewis, of the Halsey Automobile Co., as referee. Checkers at controls will be Samuel Breadon, of the Western Automobile Company; Charles E. Michel, of the Union Electric Company; and Harry W. Blodgett, the association's attorney. The Technical Committee, as decided upon, is: George P. Dorris, of the Dorris Motor Car Company; A. R. Walton, of the Standard Six factory, and Stewart McDonald, of the Moon Motor Car Company. Two trophies are offered, the principal one being the St. Louis *Star* cup for touring cars, and the other a handsome cup for roadsters, donated by the association. The entry fee is $25, but $20 will be returned to those whose cars reach the first control. The Buick "Old Red Wing," the pathfinder, will act as pilot.

The Board of Police Commissioners has purchased a Ford touring car for Chief of Police Young. The Chief and Hobart Brinsmade, purchasing agent for the board, tried the car out before it was accepted, and found it satisfactory. The car is in extreme contrast to the runabout the St. Louis chief formerly was provided with. Chief Young makes a tour of every district in the city two or three times a week, and a good, substantial car was found necessary.

The Auto Transit Company of St. Louis has been formed, with J. J. Quinn the moving spirit. The company will incorporate for $25,000, the papers having already been prepared. Mr. Quinn announces that he will start a 5-cent fare automobile line from the city limits to Bailas Road, a distance of 2 1-2 miles. The new line is designed to carry passengers to the new suburban residence division of Winchester Park, and will be the first of its kind established in Missouri. The new district was isolated, as it is 2 1-2 miles from the nearest car line from the city. The automobile line, it is declared, will be a great aid to the real estate business in that section. The line will be conductorless, the Van Note tabulators and registers being substituted. Passengers will enter at the rear of the cars and alight from the front. The Van Note tabulators act in the manner of turnstiles, and are much in use on suburban car lines in many parts of the country.

The incorporators of the company are to be: J. J. Quinn, H. L. Van Note, W. D. Helman, and William A. Estep. Mr. Quinn announces that two light cars, each to carry five passengers, will be installed at once, and that subsequently other cars will be added as the demand grows.

Many local motorists attended the housewarming given by the Overland Motor Car Company of St. Louis, which has just incorporated and moved into its new quarters at 3907-9-11 Olive street. The incorporators of the St. Louis Overland Company are Jerome Harrington, T. B. Funk, Howard Harrington, W. M. Armour and C. S. Dines.

The University Automobile Company of St. Louis has been installed in its new garage at 5800-2-4 Delmar boulevard. The building is new and affords room for the garaging of 100 cars. The company will handle the Henry car in St. Louis territory.

The agency for the Van Dyke light delivery automobile has been placed with Kardell Brothers for St. Louis and St. Louis territory. Kardell Brothers handle also the Reo and the Fal.

The Lindell Motor Car Company of St. Louis has moved its salesrooms into new quarters at 4829 Delmar boulevard.

Hoosier Happenings from a Motor Viewpoint

SOUTH BEND, IND., June 13—Work has commenced on the erection of a one-story building on East Washington street, Goshen, Ind., which when completed will be used as a garage by J. E. Smith, agent for the Ford. The new building will be of brick and cement block and well equipped.

Representatives of fourteen northern Indiana counties met in the Federal building and organized an association which will take steps to have State and national legislation in behalf of good roads in this section of the State. Only recently have a large number of the tradesmen, manufacturers and laboring classes realized that good roads in this section will be of as much benefit to them as to the farmers, and the organization is the result of the interest taken by the public in general in the good roads convention recently held in this city at the Oliver Hotel. It was decided to take the matter of good roads legislation up with the nominees to be elected to the Legislature this fall and appoint a committee to draft a measure to be presented at the next session. Articles of incorporation were adopted by the association, which will be known as the Northern Indiana Good Roads Association. The association is expected to accept the offer of Carl G. Fisher, president of the Indianapolis Speedway, who, in a recent visit to the city, expressed his willingness to furnish $10,000 worth of crushed stone for the improvement of the highway between South Bend and Plymouth, Ind.

Marking Route for Kansas City Star Tour

LA JUNTA, COL., June 12—The pathfinding party of the Kansas City *Star* trophies tour arrived at La Junta at six o'clock to-night in the big six Stevens-Duryea, driven by M. C. Nolan, the Kansas City distributor. The route layers traveled over 221 miles at a 26-mile clip to-day, starting at 9:30 at Dodge City, Kan., stopping an hour and a half at noon for luncheon at Syracuse, Kan., a half hour in Lamar, Col., to allow a long funeral procession to pass and many times through the morning and afternoon for photographs.

The route, which is following the historic old Santa Fé trail from its origin in Kansas City to the Western terminus at Santa Fé, N. M., was accurately marked along the highway of '49 most of the time to-day. Besides the granite trail markers erected by the States of Kansas and Colorado and State historical societies, the pathfinding party came across grassy mounds that mark the ruts of the wheels of prairie schooners and the tread of the oxen. At one place the trail expanded to a width of 200 feet in which there were knee-deep tracks of the old freighters.

The party has had an almost unbroken relay of pilots since leaving Kansas City June 9, and many times has been escorted by dozens of cars. The projected route of the tour in all is 2,200 miles, which, so far, has been laid through Emporia, Hutchinson, Great Bend, Dodge City, Garden City, Kan.; Lamar, Las Animas and La Junta, Col.

One Clean Score in Carolina Endurance Run

RICHMOND, VA., June 13—The Carolina Endurance Run, promoted by the *Times-Despatch*, was one of the most splendid successes that the sport has known in this portion of the South. Ten cars, out of fourteen starters, finished the 409-mile trip in good shape, despite the fact that the last day's run was made through a rainstorm that not only drenched the drivers to the skin, but made the roads, in some places practically impassable. Although there were twenty-five cars entered in the run, only fourteen reported for the start on Tuesday morning, the remainder having been withdrawn for various good reasons, principal among which was that the garages, some of which had one or more cars entered, were forced to scratch their entries through the fact that every car in stock had been sold out.

One of the big features of the four-day trip was the hospitality shown the entrants by the people of Virginia and North Carolina at every checking point. It was a gay whirl of receptions, feasts, barbecues and every other sort of the best of good times, at every stop along the entire route, with the last point always making a strong bid to outdo the preceding one.

To one thing was the attention of the party particularly drawn—the superiority of the North Carolina roads over those of Virginia. With a few exceptions—a few miles out of South Hill and Lawrenceville—the Virginia roads were found to be indescribably bad. In many places mudholes two feet deep were encountered, through which it was necessary for the drivers to work their machines with rare care and judgment, to prevent serious accident, while in others huge boulders, that had been lying in the same identical spot since the first Indian trespassed upon the property of the pre-historic race, were encountered, and around which it would have puzzled a snake to have found its way. However, inconceivable as it may seem, the cars wended their way safely over these stretches, though it is puzzling even yet to the drivers just how they did it.

North Carolina is far more progressive in her roadbuilding, than is Virginia, for Virginia has no roads that can compare with those in Franklin and Durham counties, North Carolina. The people down in Carolina believe in good roads with all their souls and both State and county make annual appropriations for their betterment and upkeep, an example which Virginia may well follow.

The White Special, owned by B. A. Blenner, which went over an embankment near Littleton on Tuesday afternoon, was dug out of the railroad cut into which it was precipitated and hoisted onto a freight car, arriving in Richmond Friday evening. Here, to the surprise of all who saw the feat, the car was cranked up and ran to the garage on her own power, without a hitch.

Following is the summary:

No.	Car	Entrant	Score
		DIVISION 1	
15	Maxwell	Dr. Saml. McAnnally	123
23	Hupmobile	Richmond Motor Co.	243
		DIVISION 3	
10	Chalmers "30"	E. C. Pelouze	35
12	Chalmers "30"	J. T. Palmatory	196
5	Regal	S. Stagg	Disqualified
16	Maxwell	.....	Disqualified
		DIVISION 4	
9	Buick 17	Foster Motor Car Co.	0
6	Rambler 53	E. J. Allen	43
13	Buick 17	R. Williams	98
18	Buick 17	J. R. Williams	224
4	Buick 17	T. E. Williams	No final exam.
3	White	B. A. Blenner	Disqualified
		DIVISION 5	
24	Speedwell	Jno. B. Alsop	20

Fuel System of Stearns Model 30-60

(*Continued from page* 1094)

main supply tank as long as pressure is indicated on the gauge.

If the pressure on the gauge G is not sufficient to raise gasoline out of the main tank, and fill the auxiliary tank A, it is a sign that the automatic valve V is out of adjustment; it should be so adjusted that it will admit gas from the cylinder of the motor until the gauge G shows sufficient pressure to afford a satisfactory supply of gasoline to run on. In adjusting the automatic valve V the proper way to go about it is to turn the adjusting screw on the top of the valve marked C2 one way or the other until the gauge registers the desired pressure; if the motor is shut down manipulate the pump P and note when the valve V shuts off the supply of air to the fuel system. It will make a slight hissing noise at the instant of closing.

It will be understood that the float chamber of the auxiliary gasoline tank must be open to the atmosphere or else gasoline will not freely flow under the force of gravity down to the carbureter.

There is one more extremely important point reserved to the last in this discussion, because it is the first thing to look for when trouble is encountered. By taking the mahogany cover off the auxiliary tank A, the knurled cap on the tank will intercept the eye. If this is screwed out a gauze filter will come with it. If the filter is scummed over it should be cleaned, but in screwing the filter back, unless it is fetched up tight, it will leak air. This leak must be stopped or the pressure on the gauge will die, and the gasoline will not be raised up to the auxiliary tank, so that there will be no supply available to the carbureter, and the motor will shut down for want of fuel. There may be a leak at some other point, as at any one of the joints in the piping system, considering any part of the piping between the auxiliary tank A and the main supply tank. The remaining and most likely place to find a leak will be at the filler cap of the main supply tank. The tool kit holds a special wrench which must be used in tightening up this filler cap; it will have to be perfectly air-tight or it will be impossible to go anywhere with the automobile. Pressure on the gasoline system is one of the conditions which cannot be disregarded if the automobile is to run with any degree of satisfaction, but if the leaks cannot be stopped it will then be necessary to work the pump P hard enough to maintain pressure, despite leaks, and in this way, it will be possible to run the automobile long enough to get home, or to a place of repair, where a bad leak may be stopped up. Finally, it is well not to become superstitious if trouble seems mysterious in character.

Aero Show Planned at St. Louis

Under the auspices of the Aero Club of St. Louis, the St. Louis National Aero Show has been organized, and will be held in the Coliseum Building, October 8 to 13, during the period when outdoor aeroplane and balloon events of international importance will take place in St. Louis.

Boston Children Given Outing

BOSTON, June 13—In a column, consisting of 218 automobiles, over 1,000 blind, crippled or orphaned children were given a fine outing on June 8 at Lake Massapoag. The affair was conducted by the Boston Automobile Dealers' Association and proved to be a success from every viewpoint.

Wheels of Progress Hum Busily in Detroit

DETROIT, MICH., June 13—Of the four or five new corporations identified with motoring here, one, the Detroit Monoplane Company, has capital stock of $20,000 paid in, with Fred Weinburg, 118 Alfred street, as the prime mover in the enterprise. Associated with him are his brother, Curt Weinburg, Ray Wilcox, William Anderson, and Alfred Brown. Several well-known members of the Aero Club of Michigan are said to have placed orders with the firm for planes.

The others are: the Shock Absorber Company, to manufacture a patented shock absorber; capital, $5,000; the Detroit Airless Tire & Rubber Company, the reorganized Dayton Airless Tire Company, which is moving to Detroit, has filed notice of its incorporation; capital, $1,500,000. Another event of the week in this line was the increase by the Demot Car Company, the present stockholders subscribing to an additional issue of $25,000 for factory alterations.

The Hale Motor & Machine Company, paid in capital, $125,000, has been incorporated by Charles Ritter, J. C. Hudson, L. J. Brennan, J. E. Dubois, and R. J. Brennan as trustees, all of Detroit, and S. E. Hale, of Cleveland.

Several other new companies are forming, but the details of these are not yet available. Among these are the Bailey Motor Car Company, to build delivery wagons and light trucks; the Johnson Roller Bearing Company, to make a new and different type of roller bearing; the Reynolds Motor Company, to build a new engine with rotary valves and other features; the Hastings Motor Car Company, to build a six-cylinder pleasure car with rotary valves; a new automobile bank; and several agency and selling companies.

It was announced that the W. A. Paterson Automobile Company, of Flint, Mich., an old established carriage firm which has just entered the automobile business and is building the Paterson "30," would establish in Windsor, Ont.

The past week also saw the tripling of the capitalization of three of the General Motors component companies in this State, these being the Marquette Motor Company, Saginaw, from $300,000 to $800,000; the Oakland Motor Car Company, Pontiac, from $200,000 to $800,000; and the Cartercar Company, Pontiac, from $350,000 to $650,000. The original total was $850,000 and the changes raise this to $2,250,000.

Great interest is being displayed here just now in the motor truck end of the industry, and a number of companies are forming to take up this work. The Oliver Motor Car Company is occupying for the present a building at the corner of Grand River and Harrison avenues, with about 5,000 square feet of floor space. This will only be used for the construction of the first few model or demonstrating wagons. Plans are being worked upon for a very large factory building, 300 feet long by 60 feet wide, four stories high for a depth of 90 feet, the balance being but two stories high. The whole will afford a total of 47,000 feet of floor space.

The first Oliver commercials will be of the light delivery type, although a one-ton truck is promised later. This first product will have a carrying capacity of 1,000 lbs., will be powered with a two-cylinder horizontal opposed engine of 4 1-2 in. bore and 4 1-2 in. stroke, a two-speed planetary transmission, made a unit with the engine, the whole forming a unit power plant which will be removable as a whole without removing anything else. The engine will be set down on a sub-frame, but will not be so low but that a bonnet will be used in front. Semi-elliptic springs will be used both front and rear, while the frame will be of pressed steel of channel section, smooth side out. The wheelbase will be 102 in., while the tread is standard. Wheels are large, and equipped with solid tires, 38 by 2 1-2 in. both front and rear. Final drive is by shaft. The very large honeycomb radiator is set in front under the bonnet.

For the coming year, a total output of between 300 and 500 is planned. The price of the wagons is doubtful as yet, but will be in the neighborhood of $1,400, fully equipped. Express bodies will be standard, but any form will be furnished on call.

The officers of the concern are: Lewis Schinnel, president; Paul Wagner, vice-president; Robert S. Hartenseine, treasurer; Frank A. Gies, secretary; and Charles F. Case, general manager.

When the buildings at present projected for the Reliance Motor Truck Company, of Owosso, Mich., have been completed, they will comprise the largest motor truck plant in the world. Announcement was made recently that the General Motors Company will at once commence work upon a number of additions to the present plant. These additions include a large assembly building, a body shop, a large paint shop, and a power plant, the whole of which will occupy 20 acres of ground. Machinery to the value of $150,000 has already been ordered. The plant has easy access to three large trunk railroads, giving unsurpassed shipping facilities.

Michigan Aero Club Plans Many Flights

DETROIT, June 13—Although the officers of the Michigan Aero Club, whose headquparters are in Detroit, have denied that they are planning to offer a prize for a Detroit-Toledo flight, several balloon flights are planned for the summer, and much other general activity in an aeronautical line.

Mexican Trip's First Stage Finished

DETROIT, June 15—Covered with Canadian mud, the Flanders "20" which is making a trip from Quebec to Mexico City ran into this city yesterday afternoon. The car was escorted around town by one day's factory output of Flanders cars, about 40 in all, and twice as many more privately owned Flanders cars. This morning it started for Toledo, Indianapolis and St. Louis. The car left Quebec June 6 and has been on the road nine days.

Speedwell Protest Checks Award

RICHMOND, VA., June 14—Because of the protest of John B. Alsop and Howard Wagner, of the Speedwell Motor Car Company, the award of the prizes in the *Times Dispatch* North Carolina Endurance Run will be postponed until the decision of the referee or the Contest Board is announced. The committee penalized the Speedwell one point each for two motor stops and eighteen points for being eighteen minutes late at Lawrenceville.

Fast Time at Kansas City Meet

KANSAS CITY, June 11—After several postponements the track meet at Elm Ridge was run this afternoon. Fifty thousand people saw Oldfield fail to beat the world's circular track record. The Knox won a five-mile free-for-all in which a Jackson and a Warren Detroit were placed. Time, 6:02 1-5. In the fifty-mile free-for-all the Knox won in 56:07, with a Cutting second in 59:04. Another Cutting was third in 60:04. The five-mile free-for-all handicap was won by Therman in an Auburn with a handicap of 70 seconds. Clark in a Cutting was second and Miller in a Warren-Detroit third. Winner's time was 5:48 2-5.

Maryland to Make Auto Treaties

BALTIMORE, June 13—Governor Crothers is preparing to establish reciprocal relations with Delaware and Pennsylvania by July 1. This will be the initial move to bring about such relations with every State in the Union.

Big Meeting for S.A.E. at Detroit in July

Divers Subjects Proposed for Discussion

HOWARD E. COFFIN, president of the Society of Automobile Engineers, has announced that the meetings of the society to be held at its convention in Detroit, July 28, 29, and 30, will be the largest ever attended by automobile engineers. There will be several professional sessions and that matters of the greatest interest will be presented and discussed by authorities is shown by the following list of proposed subjects, the most important of which will be taken up as fully as time will permit:

It will be a convention of designers and Detroit will have an opportunity to entertain all the chief engineers of the principal makers of automobiles in America, with a good contingent from abroad. The subjects to be discussed are: Gears; Commercial Cars; Electric Vehicles; Gasoline Motors; Materials and Treatment of Materials; Wheels, Rims, and Tires; Ignition; Ball, Roller, and Plain Bearings; Right and Left Hand Driving; Final Drive; Factory Systems; Contests; Miscellaneous Subjects.

The Society of Automobile Engineers. Its future intentions, and the benefits to be derived by its members.

Lines along which the work of the S. A. E. may be made of the greatest benefit to its members individually and to the motor car industry.

Specification and treatment of automobile materials generally.

Standard gauge, sizes, and chemical composition of sheet metals.

Standard sizes of seamless steel tubing.

Standard dies.

Standardization of square holes and keyways used in automobile construction.

Standardization of control mechanism—position of speed notches and actuation of planetary gear pedals.

Standardization of wheels and tires for commerical vehicles.

Nomenclature of motor car parts.

Responsibility of the motor car engineer as to safety of the car designed. Mechanical efficiency of spur and bevel gears. Form of tooth for quiet gears, both spur and bevel. Grinding methods for making quiet gears. Stub tooth and hot-rolled gears. Form of gear teeth for rear-axle bevel gears.

Design of pinions.

Types of Commercial Vehicles and Design Features

Mixed (gasoline-electric) systems.

Comparative merits of having a motor truck engine under a hood or under the seat (both vertical engines).

Proper power and speed of motors and trucks.

Does a transmission on a motor truck need to be heavier than on a touring car, using a motor of the same power?

Chain final drive for trucks and the importance of housing same.

How can the spark and throttle of commercial vehicles best be made fool-proof?

Is a chain-driven commercial vehicle as efficient with the differential separated from the transmission, and should there be more than one universal joint between, where the shaft does not exceed 36 inches in length?

Sliding gear transmissions for trucks.

The Electric Vehicle and Battery Problems

The Edison battery from actual tests; life from practical experience.

Low voltage motors for electric vehicle propulsion.

Recent improvements in electric storage batteries for both power and lighting.

Ampere-hour meters for electrics.

Relation of tire, battery and general repair maintenance cost.

About Gasoline Motors and Auxiliaries

Reports of motor tests.

Motor noises,

Cam shapes and valve operating mechanism.

Die-cast versus sand-cast bearings.

Carbureters.

What is the most quiet carbureter?

Helical timing gears.

Slide, piston and rotary versus poppet valves for gas engines.

Single—versus dual—versus en-bloc cylinder construction and advantages of each.

Three—versus five—versus two-bearing crankshaft construction.

Effect of T-head motor construction on fuel consumption.

Is the valve-in-the-head motor a more difficult one for the novice to operate?

Valve seat angles.

Cast-iron valves.

Power required to drive a motor car on various road surfaces at various speeds.

Foreign matter in commercial gasoline.

Ill-smelling and unsightly exhausts.

Two-cycle motors.

Determination of proper proportioning of cooling systems.

Air cooling.

Valve settings for racing cars.

Motor lubrication; constant level versus mechanical oiler with separate leads.

Chemical decarbonizers, are they safe and effective?

Clearance and limits for pistons, wrist-pins and valve lifters.

Advantages of a six-cylinder over a four-cylinder motor of equal rating.

Thermal and mechanical efficiency of motors for constant horsepower and variable number of cylinders, with special reference to gasoline economy of a six-cylinder motor and single cylinder motors for given kilogrammetric performance.

Automobile Materials and Treatment Demanded

The adoption of uniform symbols for the designation of heat and other treatments in connection with the specification of raw materials.

Hardening carbon steel and alloy steel gears.

Brake materials.

Best steel for ball races.

Casehardening camshafts and like pieces.

Proper materials for transmission gears and shafts for commercial vehicles.

The pyrometer: Its development and use.

The use of the Scleroscope for determining the hardness of metals.

Characteristics of Wheels, Rims, Tires, Etc.

Data on efficiency of pneumatic tires.

Clincher versus quick detachable tires.

Demountable rims.

Advisability or inadvisability of tire lugs.

Power consumption of tires versus their life.

Methods and appliances for carrying spare tires, rims and tools.

Wheel alignment, camber and foregather.

Magnetos, Spark Coils and Ignition Problems

Fixed ignition timing.

Dual versus double ignition systems.

High-tension versus low-tension magneto ignition systems.
Magneto efficiency.
Does the usual magneto arrangement give enough range of spark advance?
Direct or indirect causes of ignition knocks or chirping in large motors.

Ball Roller and Plain Bearings

Ball bearings versus roller bearings.
Live rear-axle bearings—on pinion, on differential, on axle; thrust bearings, from fiber and steel to annular and annular and thrust.
Advisability of providing universal joints with ball bearings.
The variation of current practice in anti-friction bearings. (Paper by D. F. Graham.)

Driver's Seat on Left Hand or Right Hand

Left-hand versus right-hand steering—operating levers in center.
Should the driver be on the left in those countries where the rule of the road is to keep to the right?
Chain versus shaft drive.
Worm drive.
Modern factory construction and its mechanical equipment.
Labor-saving schemes and devices in motor car production.
Shop progress.
Cork insert pulleys.
The engineer and the motor car contest. The lessons of the motor car contest.
Charts for racing drivers to fill in in making reports.
Automobile racing on a more scientific basis.
Leaf springs, their method of mounting and their proper treatment at the factory and in the hands of the customer.
Gradient of curves on roads.
Test data on frame sections.
Most suitable form of coupling between motor and motor-testing apparatus.
Transmission and rear axle noises.
Metal stampings.
Proper gear ratios in three- and four-speed transmissions.
Sheet metals.
Lubrication and lubricating devices (aside from motor) insuring proper lubrication.
Torpedo bodies.
Electric lighting.
Universal joints.
Best method of fastening universal joint sleeves.

Warner Turns His Attention to Aeroplanes

BELOIT, WIS., June 13—Announcement was made to-day by colleagues of A. P. Warner, the aeroplane enthusiast, that the latter is planning in secret a unique new style of aeroplane different from any ever built before.

Mr. Warner has just disposed of his Herring-Curtiss aeroplane, in which he made numerous daring trips over Beloit, to Joseph Seymour, the racing driver. It is said Mr. Warner has hit upon numerous ideas of tremendous importance to aerial navigation, and these, with such points of advantage as were presented by his flights in the Herring-Curtiss machine, will be embodied in the new aeroplane. Among one of the aeroplane hobbies of Mr. Warner is one of knowing the exact speed of the machine at all times during flights and his invention of the aero-meter supplied that want, the aero-meter now being used on the aeroplane which Glenn Curtiss himself drives.

The shape of the new aeroplane which Mr. Warner is to build it is said is entirely different from any of those now being used and according to those who are close to the aerial navigator many other vital points which lend stability to the air craft are to be taken care of in a manner more efficient than in other aerial flyers.

Upon several occasions last Fall, Mr. Warner startled Beloit and surrounding country by daring flights in his Herring-Curtiss aeroplane, and the news that he is building in secret a new aerial craft on wonderfully unique plans of his own created a stir in this city.

Aiding Mr. Warner in his aeroplane building are experts who are employed in his factories in all phases of delicate mechanical work. With their assistance and with the efforts lent by men of science of Mr. Warner's acquaintance it is expected that the flights of the new model will surprise even those in closest touch with the world's new sport of aeronautics.

New Hampshire's Brilliant Good Roads Outlook

CONCORD, N. H., June 13—Judge W. B. Fellows, state auditor, announced to-day that so well had James E. French, chairman of the committee of appropriations, handled the finances this year, that it will be possible to complete the three big trunk highways without issuing the $200,000 worth of bonds that remained unissued to finance that project. These highways reach out from the mountains to the State borders, touching Massachusetts, Maine and the ocean, covering several hundred miles.

Jottings From Across Big Muddy

OMAHA, NEB., June 13—The Maxwell-Briscoe branch in Omaha has moved into its new garage and salesroom at 2115 Farnam street. The new structure is probably the largest and one of the finest automobile buildings thus far completed in the city. It is two stories high, with 50 foot frontage on Farnam street, and is 128 feet deep.

The salesroom is 50 by 40 feet, with large show windows. The finishing is of maple throughout. Back of this is a room for demonstrators, a car of each model being kept there for that purpose. Also on the first floor is a stockroom for accessories and repair parts, 20 by 70 feet. On the second floor is a repair shop and stockroom. The washroom and storage-room are in the basement.

The *World-Herald* endurance run, which was the big auto event of last year in this part of the country, will be a feature of this season again, the *World-Herald* having offered another cup this year.

The South Omaha Automobile Company has opened a new garage at 436-40 North 25th street, South Omaha. Henry Petersen and his son, N. H. Petersen, are the proprietors. They will handle the Cartercar, Deal and Imperial cars.

The work of wrecking the building at 12th and Farnam streets, Omaha, to prepare for the big new garage of the Freeland Brothers-Ashley Company, is under way. The building will be four stories in height, and the Freeland Brothers-Ashley Company and the Apperson Sales agency will occupy practically all the space.

Omaha autoists are pushing a movement in favor of an auto show at the Nebraska state fair this year, and hope to have a building set apart for the exhibition of motor cars. It is believed that the idea will meet with favor owing to the growing popularity of the automobile among the farmers and rural residents.

Taxicab Company Is Common Carrier

LANSING, MICH., June 13—In a decision recently handed down by Attorney-General Bird a taxicab is held to be a common carrier, and as such all taxicab companies will have to make application to the State Railroad Commission for permission to increase or decrease their capitalization. This decision was the result of an application by the Detroit Taxicab Company to increase its capital stock from $5,000 to $100,000.

What's Doing Along Detroit's Automobile Row

DETROIT'S "Automobile Row"—as the selling agencies of cities are usually called—may be said to be in two parts, extending in two decidedly different directions. Thus, there is the Woodward avenue portion, extending northward from the center of the city, this being the principal thoroughfare of the city. Then, there is Jefferson avenue, which also extends outward from the center of the city, but in an easterly direction. This, too, is one of the principal streets. For the present, the buildings, agencies, and men along the former will be described, leaving the latter to some later date, the same applying to such agencies and salesrooms as are located on side streets.

Going out Woodward avenue, the first agency is that of the Buick Company, which is located way down town, standing virtually alone just below Campus Martius. This is a retail salesroom, handling the factory output in all branches, and working directly from the factory at Flint, forty-five miles away. Despite the location, far away from the other selling firms, this agency finds business brisk just now, with a decidedly greater call for the baby of the Buick line, Model 10. Much attention is now being paid to the new delivery wagon, this downtown location permitting access to merchants and retailers.

Above this, there is a break in the "Row" for a distance of nearly a mile, which brings one up nearly to the new site of the United States Motor Company, corner of Charlotte and Woodward avenues. This is a very large lot, with an old-fashioned brick building, which is now being torn down to make room for the more modern office building and garage. The present plans include a ground floor salesroom, garage, and agency for the Maxwell-Briscoe-McLeod Company, handling the Maxwell and Columbia cars. Part of the second or higher floors will also be at the service of this firm. The balance of the building will be devoted to the offices of the officers of the Detroit division of the company, just created.

Two blocks below this, on the corner of Sproat street, the Oldsmobile holds forth in a natty little one-story building, with a wide front and a great depth on Sproat street, the back part being the garage portion. The interior of the building, at least in the office part, is finished in weathered oak, which is very attractive. Following out its former lines, the Olds machines, originally Detroit-built, have a strong hold on the town, very many of the big model with the 40-in. wheels being seen on the streets, this being known as the Oldsmobile Limited.

Midway between the two, at the corner of Bagg street, there is a small group of agencies, with another building just going up. From Bagg street, going down, J. P. Schneider has the corner, by far the largest of the buildings. Next below this is the Detroit Motor Sales Company. Following that, the Remy Electric Company, and finally the Montgomery Motor Sales Company, and the Cartercar Company. The new building just below this has not been completed, nor has this place been definitely contracted for by an automobile firm, but it was built to rent as such.

Agencies: Hupmobile, Winton, Chalmers, Buick and Regal

Schneider is one of Detroit's oldest salesmen, being on Jefferson avenue, just east of Woodward, for a number of years, where he handled many of the most prominent American and foreign cars. By a peculiar irony of fate, the building he occupied then is now used by a horse outfitting firm, selling blankets, harness, saddles, etc. Schneider is now handling the Pierce-Arrow, Stevens-Duryea, and Baker Electric, a line of high-grade cars, this being peculiarly appropriate in this neighborhood, for years the home of Detroit's aristocracy. In passing, it might be mentioned that this city seems to have a peculiar leanning for the electric car, their number here being very great, and probably not equaled by any other city. Whether this is due to the fact that a number of electrics are built here or not is hard to determine, but the fact remains that there are many of this type of car upon the streets here.

The Detroit Motor Sales Company handles the Paige-Detroit and the Warren-Detroit, both made in the city, as the names would indicate. The former is a two-cycle car, selling at a low figure, while the latter is of the more usual four-cycle type, but also sells at a moderate price. The Electric Company, of course, sells the well-known Remy magneto, as well as the other ignition specialties of this Indiana firm. Quite an extensive line is handled by the Montgomery Sales Company, including as it does the American and Speedwell, with the cartercar sharing the salesroom. The latter is a friction-driven car, selling at a moderate price, while the other two cars are listed at higher prices,

Goodyear Tires Are Prominent on the Row. They Are Kept Here

the American, in particular, being an expensive car. In this line, the greatest demand seems to be for the Traveler, of which model it seems impossible to keep one in the salesroom floor. The Cartercar, too, is very popular in this city, being built so close by as to be practically a Detroit-made car.

Above this group, the selling houses skip another long distance to Parsons street, at least a half mile. Below this street, on the East side are the Postal-Doherty Auto Company, and the Michigan Motor Sales Company, sharing a large building, of 60 feet frontage and nearly triple that depth. The former is the selling agent for the White, while the latter is the State sales agent for the Oakland and Welch. Each firm has its own showroom, the front of the building being divided squarely in half by the driveway to the garage.

Diagonally across the street, but above Parsons street, are the city salesroom, charging station and garage of the Anderson Electric Company, makers of the Detroit Electric. This build-

ing has the same characteristic Detroit automobile sales building shape with two showrooms, one on either side of the wide drive. the remainder of the building being devoted to the working part of the establishment. The building is larger than those just described, being some 75 ft. front and correspondingly deep. The strong hold which the electric car has upon this city, as just spoken of, keeps this place busy at all times, although from a sales point of view, the floor is bare at all times, the cars selling faster than the factory can furnish them.

Above the next street, very properly named Selden, is a large group, consisting of Brush and the Apple Electric Company on the west side, and the agents for the Hupmobile, Stewart speedometer, Stromberg carbureter, Marmon cars, Winton, Chalmers, and Buick, quite a large and representative group, which might be said to be augmented by the Regal agency in the block above, but practically across the street from the last of the row, Buick, because there is no intervening building.

Everitt "30" Dwells in a Well-Equipped Building, as Shown

The Brush agency is, of course, a factory branch, and has in connection a large garage, this being located at the rear, and entered from the side street, Selden, to which it runs, the building being L-shaped. Next above this the Apple Electric Company has a small place, selling the storage batteries, magnetos, and other ignition apparatus, as well as the Aplco electric lighting system.

The Keeler-Hupp Company is the agent for the Hupmobile and shares a Detroit-style building with a sales agency for accessories, which latter has the Stromberg carbureter as well as the Stewart speedometer, both Chicago products. Collins & Co., having just taken on the Marmon state agency, have space in here also. The Winton Motor Carriage Company place is a factory branch and, of course, sells only the one car, the Winton. Although not a branch, the same is true of the Grant Bros. Automobile Company, dealing exclusively in the Chalmers product. Both of these, as well as Buick on the corner, have the typical floor layout referred to as the Detroit style of building.

This, with Regal, previously spoken of, concludes this group and the next is another short jump away, being some three blocks farther north at Garfield street. Below this is a group of one-story buildings, with the Standard Auto Company, selling the Packard, on the corner; C. F. Gilmour, selling the Mitchell, next, and below the latter, the Neal-Kitchel Motor Sales Company. The last named sells the Paterson 30, the Parry, K-R-I-T, and De Tamble, a long line, varying in price from $850 for the last to $1,400 for the first, but all medium-priced cars. The latter and the Empire Tire Company have the ground floor of a two-story building, the upper floor of which is also devoted to automobile products, Empire tires having part of it, and the Detroit Leather Works, making the Knight leather tires and tire protectors, the other parts. This is in one of the finest parts of the city, being just across the street from the Detroit Athletic Club.

Detroit "Electric" Lives in an Up-to-Date Garage

Across Garfield street is one of the newer buildings, built last year, but now fully occupied. This is a two-story building with the whole ground and second floors devoted to accessories, with but one exception, the agents for the Great Western, also selling as a side line the Everitt "30." The corner is occupied by the B. F. Goodrich Company, selling Goodrich tires and mechanical rubber goods, with a large repair department at the back, on Garfield street. The next store houses C. F. Splitdorf. Here are sold the Splitdorf ignition specialties, coils, magnetos, batteries, etc. Going on up, next is a general sales company, selling Sterling tires and Warner autometers. The rest of the ground floor is given over to the interests of Prest-O-Lite tanks, Emil Grossman with his wind shields and other specialties, and Wheeler & Schebler, while on the second floor are located the following, all well-known in the trade: R. E. Dietz & Rushmore Lamp Company; Lazarnick, the photographer; Auto-Automatic Windshield Company; Hubbard Engineering Company, representing Thermoid Rubber Company, Heinze Electric Company and Lumen Bearing Company; Sibley Motor Car Company; Bosch Magneto Company; and the Rubber Company of America, World tires. Just two doors above, close enough to be a part of the same group, is the Pennsylvania Rubber Company, in its recently opened office. The building, called the Edwin S. George Building, is so nearly composed of glass windows with corners and a roof, that it might be called a glass house. The result is very light showrooms, and a pleasant place to work.

Speaking of glass brings to mind at once the next in order going up the row, the new home, not yet completed, of the Everitt "30." It is the farthest down town of this group, which extends downward from Warren street. The corner, extending back on Warren for 250 feet, has not yet been rented, although several automobile firms are looking at it. The same applies to the second store, while the third has been taken by the Harper-Aldrich Auto Company, selling agents for the Demot car. This brings us to the Everitt building, the sales agents being the Security Auto Company. This building will be one of the future models for agents' buildings. The whole two-story height has been made one story clear, with enormous panels of glass from the sidewalk upward at least 16 feet. Above this are several rows of smaller panes of glass, so that the whole front is of glass. To this alone the building does not owe its distinction, the salesroom being notable in other ways. The whole front, as deep as wide, and this is 60 feet, is made one room, panelled in oak, with a dull finish, as high up as 12 ft. The entrance for cars, to the showroom and to the garage in the rear is by the covered drive between the Security and the Harper-Aldridge companies. For the garage this leads straight back, being of unusual width.

Just above Warren, practically across that street from the building just described, is going up another, but very large, automobile building. This measures some 90 feet in width and about 260 in depth. At present but the side walls and center dividing

wall are up, but it is said that this has been rented to a firm farther down the street. Grant Bros. are rumored to be the lucky ones.

Again there is a large gap in the row, this one being about a third of a mile to the next-to-last group, which includes not only the older structures, but two new buildings, not yet finished, as well. One of these is the new Detroit home of the Rapid trucks, while the other is as yet untaken. The Rapid place is finished in a California Mission style, with red tile roof, hanging low over the front of the building, which is of dark green brick. The interior will be equally attractive, with its spacious rooms, plenty of light, and handsome mission furniture.

After the new building, going north, one comes first to the home of Vesta Accumulators, a small store, but devoted exclusively to this ignition firm's specialty. Next above that is where the Eclipse gas tanks and Federal tires are sold. This firm does a general tank business, taking orders to fill or refill any kind, make or type of gas tank. The two-story building beyond this is the "hang out" of Reo and Thomas pleasure cars and Grabowsky commercials on one side, and Stearns pleasure cars on the other, the former being sold by the Century Motor Sales Company and the latter by the Palmer Auto Company. Both report a flourishing business, while the garage in the rear is also doing well.

The building next above is another double purpose structure, the Annett Auto Garage being the nominal proprietors, while the two salesrooms in the front, one each side of the entrance to the garage, are occupied respectively by a firm handling the Auburn and Bernhard Helfern & Company, selling the Herreshoff. Up over the Annett garage, Spooner & Wells, photographers, have the whole front of the building.

On the same side of the street, the west, one block farther north, is the factory of the Beyster-Detroit Motor Car Company, manufacturers of the Beyster-Detroit delivery wagon. Although hardly classified among the sales agents, the front of the deep building is given over to local sales, no other agent being employed. This firm builds a light delivery wagon, of which a number have been sold in the city.

Diagonally across the street is the last of the agencies conducted by a private individual for profit, the only other selling agency on the street being the Cadillac in the block above, but this latter is a factory branch. By this, reference is had to W. F. V. Neumann & Company, handling the Rausch & Lang Electric and the Stoddard-Dayton. This building has a very large frontage on Woodward avenue, some 120 feet, and is, in fact, one of the best arranged garages in the city, the front of the building only being devoted to the use of the sales force. The building is but one story in height, but the width, taken with the great depth, gives the whole a very large amount of floor space. Business is reported brisk both in the electrics and the line of Ohio cars.

Last of the buildings on the street devoted to the sales end is the Cadillac branch, previously mentioned. This is on Woodward avenue, just at the railroad crossing, and a little above Amsterdam street. One block back of this, occupying the same position on the street, is the immense Cadillac factory, while just across the railroad to the north is the factory of the Briscoe Manufacturing Company. The Cadillac building is in two parts, the one containing the salesrooms proper, and the other without the glass front and other indispensable parts of a city salesroom being devoted to the garage and car storage, the factory often making use of this in time of car shortage, that is freight cars. This closes the list of Woodward avenue selling houses.

Rain Checks New Jersey Run

The endurance contest of the New Jersey Automobile and Motor Club, which was scheduled to be run off Saturday, June 11, has been postponed until June 18. The start will be from the clubhouse in Park avenue, Newark, at 5 o'clock in the morning.

Winton Officers Hold Conference

CLEVELAND, O., June 13—Winton branch managers, salesmen and other prominent employees of the Winton company from Boston to Seattle spent the week of June 6 in Cleveland. The first two days were devoted to business affairs, including a thorough inspection of the Winton Six, details of which will be made public on July 1. When business had been disposed of the visitors attended ball games, theater parties, various luncheons and dinners, and indulged in athletic sports. Mr. and Mrs. Winton entertained the entire party on Wednesday with a lake ride on Mr. Winton's big steam yacht, "La Belle," at dinner at Roseneath, the Winton home, and with an evening at the theater.

Among those present at the convention were President Alexander Winton, Vice-President Thomas Henderson, Secretary and Treasurer George H. Brown, George W. Miller and A. G. Schaefer, of Seattle; H. L. Owsney, of San Francisco; W. D. Howard, of Los Angeles; F. A. Hinchcliffe, of Boston; Charles M. Brown, of New York; A. E. Maltby and F. W. Stockbridge, of Philadelphia; W. L. Duck, of Baltimore; Earl H. Kiser and S. R. Iams, of Pittsburg; C. M. Brockway, George Arbuckle, F. H. Walley, F. N. Sealand and Frank Robishaw, of Cleveland; Thomas W. Henderson, of Detroit; J. F. Davis, W. A. Stoker and A. J. Roe, of Chicago; Charles S. Calvert, of Indianapolis; J. S. Johnson, of Minneapolis; J. J. Jack, of Denver, and the following from the main office: Sales Manager Churchill, Advertising Manager Mears, Superintendent Waidig, Purchasing Agent Ranney, Parts Manager Smith, Traffic Manager Baughman, Engineer Anderson, James Winton, W. E. Miner, of the accounting department, and W. J. Ward, of the advertising department.

Mr. Winton contemplates building aeroplanes in which he will incorporate ideas of his own. While in Paris, recently, he spent a great deal of time visiting the twenty plants where aeroplanes are made, and was much impressed. He has ordered a Gregorie monoplane. As soon as the machine arrives he will begin the work of familiarizing himself

Winton Sales Force at Mr. Winton's Residence "Roseneath"

with the art of flying. The machine was shipped on May 30. Frank Lahm, father of Lieutenant Lahm was in charge of the construction.

"I have always been interested in aeroplanes," said Mr. Winton recently, "but I never before had time to look into them. I am going now to see what there is in them. I want to keep abreast of the times. I think it would not be right for anyone in this country to build aeroplanes without making some kind of terms with the Wright brothers. If I ever make a long flight it will be in a machine of my own and one that I have built myself." It is expected that Mr. Winton will make rapid headway in this new undertaking of his and much interest is being taken.

Ground Broken for New Lozier Plant

Work on the new million-dollar plant of the Lozier Motor Company at Detroit commenced May 18 and already the concrete foundations upon which the buildings will stand have been put in. The steel construction work will begin in the near future and the whole fabric is expected to be pushed.

Albert Kahn, the originator of the Kahn system of construction, which is now in general use in building the highest class of automobile plants, is in charge. A. Bentley Sons & Company of Toledo are the contractors. J. G. Perrin, superintendent of the Lozier plant, has general supervision of the work.

The buildings, according to preliminary announcements, will

From Left to Right: Albert Kahn, Mr. Bentley and J. G. Perrin

be as complete and perfect in every way as the present advanced stage of the structural art will permit. Mr. Kahn is authority for the statement that they will represent the highest type of accomplishment in that line ever undertaken by him. Particular stress is laid upon the sanitary advancement and material comfort of operatives and employes in the plans presented to the company. Plenty of light and air and the best type of machine room construction will be the chief features of the new plant.

The photograph for the accompanying illustration was taken the day ground was broken for the massive foundations of the main building.

Nine Enter for Munsey Tour

WASHINGTON, D. C. June 13—The entry list for the Munsey historic tour was opened this week and the close of the week found nine nominations, as follows: Premier, Premier Motor Manufacturing Company, Indianapolis; Columbia, Columbia Motor Car Company, Hartford, Conn.; Selden; Maxwell, T. A. Lambert, Baltimore, Md.; two Washingtons, Carter Motor Car Corporation, Washington, D. C.; Reading, Middleby Automobile Company, Reading, Pa.; Ford, Charles E. Miller, Washington, D. C.; Elmore, Frank Hardart, Philadelphia, Pa.

The work of pathfinding the route will begin Wednesday, when an E-M-F touring car, with Tom Skeggs at the wheel, will start from Philadelphia. The members of the pathfinding party are Harry Ward and F. J. Byrne, staff correspondents of the Munsey newspapers, and Nathan Lazarnick, photographer.

Hartford Notes on the Automobile

HARTFORD, June 13—An orphans' day run is planned by the Automobile Club of Hartford for the latter part of June. The children of the Blind Institution are to be included in the outing this year. The committee in charge is hustling to make the affair bigger and better than ever before.

Hartford will have its first sight of a real aeroplane July 4, when Charles K. Hamilton plans to fly from New Britain to Hartford and circle the State Capitol.

Virginia Auto Law in Effect

RICHMOND, VA., June 13—The new law governing automobiles, passed by the last Legislature, goes into effect Wednesday. Most of the autoists of the State have secured their new cards, but there are still a number who have not conformed to the law.

Formerly there was only a charge of $2 to obtain a number, which was good during the life of the machine. The speed limit in the country was fifteen miles per hour. Now twenty miles an hour may be traveled, while the following is a schedule of the new fees: Twenty horsepower and less, $5; over twenty and under forty-five horsepower, $10; forty-five horsepower and over, $20; motorcycle, $2; chauffeur, $2.50; dealers' demonstration license, $50. All old numbers stand annulled after Wednesday.

The new law provides that the operator of a machine shall not drive in the corporate limits of any city or town at a rate of speed greater than twelve miles an hour, unless the local ordinance of such city or town shall provide otherwise. Outside the limits of any city or town, a speed of twenty miles an hour is permissible, except going around curves, down sharp declines, or at the intersection of any crossroads, or over the crest of hills, or in passing other vehicles or riders on roadways, when a rate of speed not exceeding eight miles per hour must be observed.

The law provides that when horses are frightened, upon a signal or request from the driver or rider, the chauffeur shall immediately bring his machine and its engine to a full stop and allow ample time for the rider or driver to pass.

Following the usual annual custom, the Richmond Automobile Club proffered its cars for Orphans' Day, and the children were taken for a spin to the country.

Nearly 400 children gathered at Capital Square Park at 3 o'clock. The route was to Lakeside Park, where the youngsters were turned loose for a romp.

A public subscription fund to be used on improvements to the Midlothian highway from Richmond to Falling Creek, a distance of about twelve miles, has been raised by Supervisor Thomas E. Woodfin, amounting to $5,000.

News Notes from Nashville

NASHVILLE, TENN., June 13—Capital stock to the extent of $400,000 has been subscribed and paid in to establish in Nashville the Southern Motor Works, and the plant of the company now located at Jackson, Tenn., with a small capacity, will be moved here, the new factory to have a capacity of 750 to 1,000 cars per year from the beginning, with provision made for expansion. Several of the wealthiest citizens of Nashville are interested in the enterprise. A charter has just been secured, incorporating the company for $400,000. The incorporators are are follows: A. H. Robinson, Exile Burkett, John L. Wisdom, Geo. W. Killebrew, Johnson Bransford, Arthur B. Ransom, G. M. Neely, J. H. Ambrose, John W. Love and John H. Howe.

The company has already secured a building, having purchased the factory of the Phoenix Cotton Mills, and it is now being cleaned and rearranged. Exile Burkett is president of the company, A. H. Robinson is vice-president, J. H. Fisher, secretary and treasurer, and W. H. Collier, superintendent. The company manufactures the Marathon, a car that sells for $1,500.

The Nashville Motor Car Company now has on display in its show rooms a full line of 1910 Buicks, and also a Dorris car and a Dorris chasis. The chassis has been displayed at a number of shows and was loaned the Nashville auto firm. Duncan R. Dorris, the manager, is a brother of the designer.

An automobile highway is to be built between Morristown and Rogersville, Tenn., a distance of 22 miles, arrangements having been completed at a public meeting held for the purpose.

The Hoard-Cregor Company, which recently moved into a new garage on Broadway, held a public reception for several days, lately. The house was attractively decorated for the occasion and models of the various cars represented by the company were on exhibition.

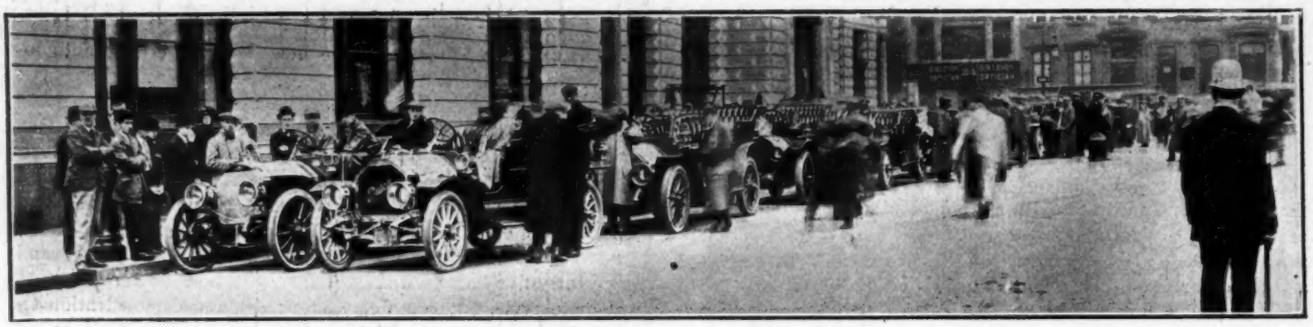


Fig. 1—Start of the all around Long Island-"Montauk Light or Bust" run

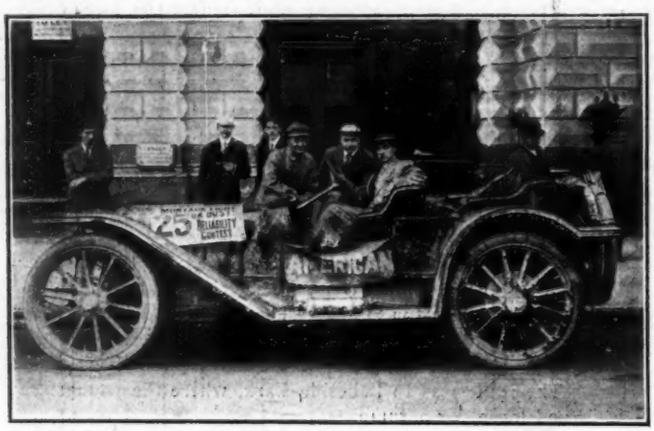


Fig. 2—American car at the start of the run

Fig. 3—Regal in the shape it expects to return

Fig. 4—The Franklin one-ton delivery wagon which is for supplies

Montauk Light or Bust

Under superb weather conditions and with everything favorable for good sport and a pleasant tour, the "Montauk Light or Bust" run of the Motor Contest Association started from Madison Square Tuesday morning. The cars were classified in seven divisions under Class A rules according to list prices.

The first day's schedule called for a long run down the south shore of Long Island, approximately 211 miles, over 50 miles of which is through the celebrated Montauk badlands. Over the barren lands and close to tide water, the course lay for miles, the ocean dashing against the beach at their feet, and the seabreezes blowing into the faces of the tourists. The return trip was by a more northerly route. A Thomas Flyer, in charge of Raymond Beck, laid the confetti trail.

The other official cars included a Knox, carrying Referee Allen C. Alderman, president of the Long Island Automobile Club; a Mitchell "6", pacemaker, with Oakley Delamater, and a Franklin, Welch-Detroit, Palmer-Singer, Chalmers, Packard, Velie, Babcock and American carried press representatives and working officials.

"Senator" William J. Morgan, president of the Motor Contest Association, authorized the statement that this run would prove the last that he would promote. Senator Morgan has had much success in this line of endeavor and in speaking of his determination said that he figured that he had done enough. The list of entrants is as follows:

Car	Entrant	Driver
Division 1A—$800 and under—		
Hupmobile	F. L. C. Martin Auto Co.	Elmer D. Cutting
Hupmobile	F. L. C. Martin Auto Co.	R. E. Gillam
Division 2A—$801 to $1,200—		
Ford	Ford Motor Co.	W. A. Starbuck
Mitchell	Mitchell Motor Co. Brooklyn Branch	D. M. Hasbrouck
Buick	Buick Motor Co.	E. E. Easter
Ford	Ford Motor Co.	W. B. Young
Division 3A—$1,201 to $1,600—		
Regal	Regal Detroit Auto Co.	
Mitchell	William Simonson	William Simonson
Chalmers	Continental Caoutchouc Co.	E. Miles Welch
E-M-F.	Studebaker Bros. Co.	E. A. Taylor
Division 4A—$1,601 to $2,000—		
Pierce Racine	S. W. Fromm	Lewis Strang
Velie	Garland Auto Co.	
Auburn	LaDue-Carmer Motor Co.	Herbert F. Earl
Mitchell	Mitchell Motor Co. of N. Y.	O. R. Delamater
Elmore	John L. Gwyer	John L. Gwyer
Westcott	Dunlop-Taylor Motor Co.	Thomas Wilson
Buick	Dr. William H. Nafis	Dr. William F. Nafis
Buick	Buick Motor Co.	W. Davenport
Buick	Buick Motor Co.	Philip Hines
Buick	Buick Motor Co.	Frank Remsen
Division 5A—$2,001 to $3,000—		
Haynes	Walter E. Shuttleworth	Walter E. Shuttleworth
Mercer	Mercer Auto Co.	
Franklin	Franklin Auto Co.	C. J. Hickman
Selden	Cloud-Marts Auto Co.	George E. Mack
Division 6A—$3,001 to $4,000—		
Franklin	Franklin Auto Co.	Paul Harvey
Knox	Knox Auto Co.	H. K. Sutherland
Welch Detroit	Welch Detroit	Ward Smith
C. G. V.	C. G. V. Import Co.	Arthur Coombs
Division 7A—$4,000 and over—		
Zust	American Zust Motor Co.	V. P. Pisani
Amplex	S. J. Wise & Co.	Walter Jones
Fiat	Hugo Ricca	Peter Smith
American	American Auto Co.	Earle A. Cryne
Stearns	Edgar Gibbs Murphy.	Edgar Gibbs Murphy

Delawareans and Philadelphians in Accord

WILMINGTON, DEL., June 13—As a result of the persistent and aggressive work of the Delaware Automobile Association, Delaware has been eliminated from the fight between the city of Philadelphia and New Jersey automobilists, which had reached a point where it had become very annoying to Delawareans, particularly residents of this city, who often motor to Philadelphia, chiefly for the purpose of enjoying a ride through Fairmount Park. While the association members are reaping the benefit, so are all other Delaware automobilists, and naturally the association and its officers, who were instrumental in accomplishing this result, are receiving a great deal of praise.

In order to insure enforcement of the Pennsylvania automobile law within the city limits, and incidentally to keep out New Jersey autoists who sought to come in without Pennsylvania licenses, the Department of Public Safety of Philadelphia about two months ago issued an order requiring all cars entering the city without Pennsylvania license tags to be driven to the City Hall, where a permit must be obtained before the machine could proceed further. In the case of Delaware this permit did not cost any money, though it resulted in a great waste of time and also in much annoyance. Delaware and Pennsylvania have reciprocal relations, so far as motor cars are concerned, which enable those bearing the tags of either State to enter the other with a home tag. The reciprocal period in each State is 10 days. As a result, there is the best of feeling between Delaware and Pennsylvania, but just the contrary is the case between Pennsylvania and New Jersey, the latter not being willing to have reciprocal relations, and the result is that a Jersey machine is not allowed to enter Pennsylvania without a Pennsylvania license, if it can be prevented.

This is why the city of Philadelphia issued the order requiring a permit for all non-resident machines, and for the same reason the Fairmount Park Commission, a few weeks ago, made an order requiring all machines entering the park to carry special Fairmount Park license tags, which were obtainable at the City Hall, and at certain times from some of the guard houses in the park. This also caused a great deal of annoyance and confusion to Delawareans who went to the park, for if they depended upon obtaining a license tag there and happened to strike the wrong gate they would be required to leave the park and go around it until they came to a place where the tags could be obtained. As was the case with the city authorities, there was no fight against Delaware, but Delaware had to put up with the annoyance just the same, until the Delaware Automobile Association was able to revolutionize the whole situation.

The trouble came to a climax the early part of last week, when the Department of Public Safety of Philadelphia directed the police to rigidly enforce the order requiring permits, which had not been enforced prior to that time, though it was issued some time ago.

The city and park matters were both taken up by the Delaware Automobile Association, through its executive committee. The association has an attorney in Philadelphia, who was also of assistance. He pointed out to the city authorities that the Pennsylvania automobile law prohibits cities or towns requiring permits in addition to State licenses, and as a result on Friday of last week the order requiring permits in the city was rescinded by the Department of Public Safety, and on the same day the Fairmount Park Commission rescinded its order requiring special tags for the park.

Now all that is necessary for Delaware automobilists visiting Fairmount Park or any place in the city of Philadelphia is to have a Delaware license tag in plain view on the machine, and have the accompanying registration card, to be shown if called for, though the tag is usually accepted without question.

Philadelphia Club Activities

PHILADELPHIA, June 13—The fourth annual summer track meet of the Quaker City Motor Club, at Point Breeze, will be held Saturday, June 18. A feature of the entry blank which is something of a novelty is the announcement of the Contest Committee that if, in their opinion, the number of cars entered in any event is insufficient to guarantee a contest, they reserve the right to return the entrance fees and declare the event off.

The contest fever has attacked even the ultra-conservative Automobile Club, of Philadelphia, and the Tours and Runs Committee of that organization has planned a two-day tour, June 25-26, with a secret-time schedule for each day, to Lake Hopatcong, N. J., and return. Allen Shelden, chairman of the committee, who, by the way, is president of The Motor Company, which handles the Premier car here, and who was the originator of the annual Premier runs, will endeavor to induce officials of large towns on the route to offer prizes for the driver who covers the distance from each day's start to the town mentioned closest to the official secret time. This scheme worked out very well in last Saturday's Premier run. Members only are eligible to compete.

The "sociability" run of the North Wildwood Automobile Club from this city to Wildwood on July 2 next, the preliminary to the club's races on the Speedway there on the 4th, promises to be well patronized. The route will be laid out via Salem and Bridgeton, the automobile club of the first-named city having asked the privilege of furnishing lunch to the contestants. Besides providing much sport, without the hard work inseparable from an endurance run, the cities, towns and villages along the route have been flooded with booklets pointing out the beneficial effects of such contests upon the good roads movement.

Automobile Club in Sage Brush

GOODING, IDAHO, June 13—Motor clubs and alfalfa alike flourish in the sage brush country, and both are seemingly prolific in their growth. The Gooding Motor Club, just organized, has its headquarters where two years ago there was nothing but a lonely ranch house, a railroad siding and an occasional sheep herder to relieve the monotony. To-day Gooding is a city of 2,500 inhabitants, with electric lights, telephones, fifteen miles of cement sidewalk and all the conveniences to be found in cities of ten thousand population in the Eastern States. Motor cars are plentiful in the town, and many of the ranchers use this vehicle instead of horses and wagons.

The Gooding Motor Club starts with a charter membership of twelve, and the motor ranchmen of Lincoln county are sending in their applications, so that the club promises to reach fifty or more before the summer closes. The club has adopted "Good Roads" as its slogan, and it will at once begin a vigorous campaign for the improvement of the roads of Lincoln county. The officers of the club are: President, Judge J. D. Furcht; vice-president, Dr. W. H. Johnson; secretary, Robert W. Spangler.

Delaware Club Run June 18

WILMINGTON, DEL., June 13—The annual run of the Delaware Automobile Association this year will be to Oxford, Pa., and will cover about 82 miles, starting and ending at the Court House in this city and going through London Grove, Pa., on the trip out and through West Grove and West Chester, Pa., on the return trip. June 18 was selected as the date for the run. A sealed time run was decided upon.

In the Realm of the Makers

Paul Gaeth, president of the Gaeth Auto Company, left Cleveland Tuesday, June 7, for a two months' trip in Europe.

The Car-Makers' Selling Company, George L. Derr, president, has been incorporated to do business in New York. The company is located at 1780 Broadway.

The New York Auto Top and Supply Company has opened a branch establishment for the manufacture of automobile tops at Paterson, N. J.; the main branch is at 267 Halsey street, Newark.

The Vickers Auto Car Company, of Coshocton, O., has completed its first car, which will be called the Vickers. The machine is a runabout with a four-cylinder, 2-cycle, air-cooled motor. Carl Vickers, proprietor of the Vickers Repair shop, backed by E. H. McMasters, of Bellaire, O., is at the head of the enterprise.

The New Departure Manufacturing Company, of Bristol, Conn., manufacturers of New Departure ball bearings, is installing a Snow twin-tandem gas engine of 500 horsepower, thereby increasing the power plant to five engines of this type. The new engine will furnish power for three new buildings now in course of erection.

The Sands Specialty Company has been recently organized in Cleveland for the purpose of marketing an improved form of the Sackman starting device. The inventors, W. H. and C. M. Sackman, are both enthusiastic about their product and claim it is the simplest and surest method of eliminating cranking dangers. A factory for the manufacturing of these appliance on an extensive scale is now being arranged for.

The Joseph Dixon Crucible Company at its annual meeting re-elected the old board, consisting of Geo. T. Smith, William Murray, William H. Corbin, Edward L. Young, Geo. E. Long, William H. Bumsted and Harry Dailey. The board of directors re-elected the former officers, namely, Geo. T. Smith, president; William H. Corbin, vice-president; Geo. E. Long, treasurer; Harry Dailey, secretary; J. H. Schermerhorn, assistant treasurer and assistant secretary. William H. Corbin was also re-elected as counsel.

The Canadian New-Way Motor Company, Ltd., a branch of the New-Way Motor Company of Lansing, Mich., has been formed and a plant is to be built at Welland, Ont., a Canadian town a few miles from Buffalo, N. Y. The new company is capitalized at $50,000 and the directors are William E. Newbrough, C. D. Woodbury, E. H. Goodnow, L. M. Gleason and H. E. Thomas of Lansing. Air-cooled gas and gasoline engines will be manufactured and the export trade of the company will be transferred to the Canadian concern, from which exportation can be made to advantage owing to the preferential tariff Canada has with Great Britain and her possessions.

Seventy-five new members have been added to the Portland (Ore.) Automobile Club since the new officers started to work. The slogan is "1000 in 1910," and a recruiting committee is working to raise the membership to the century.

Wisconsin registration June 1 reached 12,740 and applications are coming at the rate of 40 to 60 a day. This is the best motor car year Wisconsin has ever experienced.

Fig. 1—Earl J. Moon in a Moon "30" trying out the beauties of car and road in St. Louis

Fig. 2—K-R-I-T car with Baron Von der Noot de Moorsel, who is making a trip around the world. Mayor Breitmeyer, of Detroit, is saying good-by to the Baron

A new motor car built by the McKeen Motor Company at Omaha, Neb., has just been placed on the LeRoy, N. Y.-Rochester route of the Buffalo, Rochester & Pittsburg Railroad Company. The car is 72 feet long, 10 feet wide and weighs 68,000 pounds.

"Tim" Lynch, well known to Adirondack tourists, has opened a garage at the Leland House, Schroon Lake, N. Y. Mr. Lynch was formerly foreman for Miller Bros., at Glens Falls.

A paper chase has been planned by the Motor Racing Association for its members and guests, June 15. The route has been selected through a remarkably isolated country, but its details will not be given out until the day of the affair. It will be run in the vicinity of New York.

The Minneapolis Automobile Club is constructing a lagoon at its clubhouse at Bloomington, so that members may reach the clubhouse from the city via the Minnesota and Mississippi rivers in launches. The distance by river is 25 miles. Power boat races in the river will be a feature of the late summer, and the club may go in extensively for this branch of sport.

Frank F. Weston has been appointed general sales manager of the Mercer Automobile Company, with headquarters at Trenton, N. J.

W. A. Gilbreath has taken on the management of the Motor Car Sales Company at Indianapolis. The concern handles the Peerless and Everitt "30."

Frank Donnell, for many years connected with the Ford Motor Company, has been appointed assistant manager of the Atlanta branch of the Ford company.

C. H. Bigelow, who at present is making a transcontinental tour in a Mercer car, has experienced some bad weather and heavy roads. He is approaching his destination, Los Angeles, over the old Santa Fé trail.

Agency and Garage News

The Hollenbeck Automobile Company, of Portland, Ore., have secured the agency for the Croxton-Keeton car in that city.

C. A. Eaton has taken the agency for the Westcott car in Boston. He formerly handled the Lambert and is well known in the trade.

The O'Neil Tire & Protector Company has opened a sales depot at 126 Massachusetts avenue, Boston, Mass. F. W. McGahan, formerly of Ennis Tire Company, is manager.

The Haynes Automobile Company has closed a contract with F. H. Grasswick, Calgary, Alberta, Canada, to take the Haynes agency for the territory of Alberta and Western British Columbia.

The Meyer Carriage and Auto Company, 322-324 Ellicott street, Buffalo, is the distributor of the Pullman motor car in Buffalo and vicinity.

Joseph Nelson, of Montpelier, Idaho, and M. Crumrine, of Greenville, Ohio, will handle Great Western cars exclusively, having been recently appointed agents by the makers of these machines.

The Cincinnati branch of the Goodyear Tire & Rubber Company, for some years located at 317 East Fifth Street, will move on or about July 1, to new offices at 127 East Seventh street, the "Automobile Row" of Cincinnati.

The Chisholm Sales Corporation, which was recently incorporated in Buffalo, has opened headquarters at No. 730 Main street in that city. The concern will have the Buffalo agency for the National, Locomobile and Speedwell motor cars.

The Studebaker Automobile Company is seeking a location for its Pittsburgh shop work. Plans for a four-story building are being prepared and a site will be announced shortly. This branch covers the western half of Pennsylvania and parts of West Virginia and Ohio.

The J. Ludwig Co., Inc., of 20 Camfield street, Newark, N. J., is building a three-story fireproof structure at 275-279 Halsey street, that city, which will be ready for occupancy about July 1. The company has the State agency for the Randolph Commercial Wagon and will add a pleasure vehicle to its line in the fall.

The Garage Owners' Association of New York will hold its first annual dinner at Reisenweber's, June 23. A large attendance is expected and a list of notable speakers will take part in the program. The association now includes two-thirds of the garages of Manhattan and the Bronx. At the last meeting five new members were elected and several applications for membership from Brooklyn and out-of-town were received.

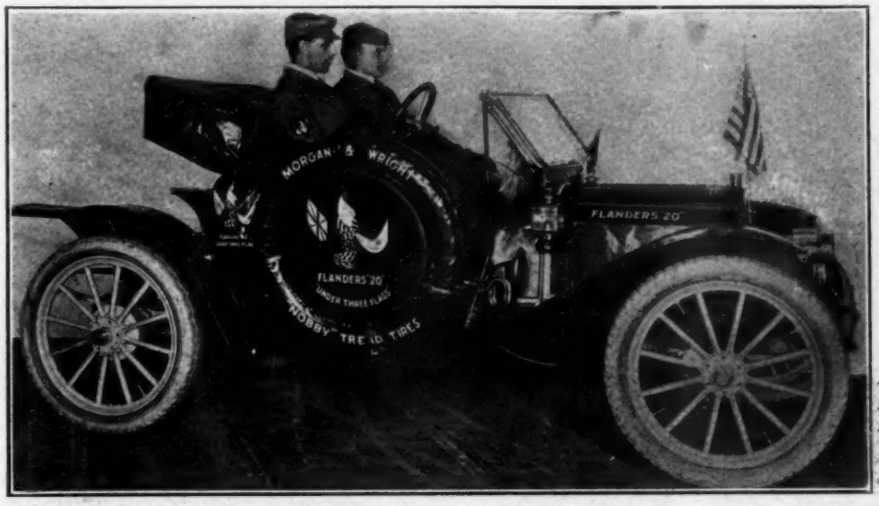


Fig. 3—Flanders 20 "Under Three Flags" ready to start its trip, extending from Quebec to Mexico City

J. P. Dick was recently appointed State agent of the American cars at Atlanta. He has offices at 105 North Pryor street.

A. G. Spalding & Brothers have removed from 200 Halsey street, Newark, N. J., to their new branch at 845 Broad street, that city.

Edward T. Smith, formerly in the sales department of the Iroquois Rubber Company, of Buffalo, has been appointed manager of the company. John S. Watterson is the assistant manager.

The A. R. Mosler Company announces that it has secured the services of H. A. Wattenscheidt, formerly with James L. Gibney & Bro. Mr. Wattenscheidt will cover the New England territory.

C. C. Early, recently manager of the used motor car department of the Franklin Automobile Company, is now connected with the sales department of the Euclid Automobile Company, of Cleveland.

A. W. Woodruff, formerly connected with the Western Reserve Motor Car Company of Cleveland as selling agent for Apperson cars, has joined the Cleveland sales force of the Stearns Company.

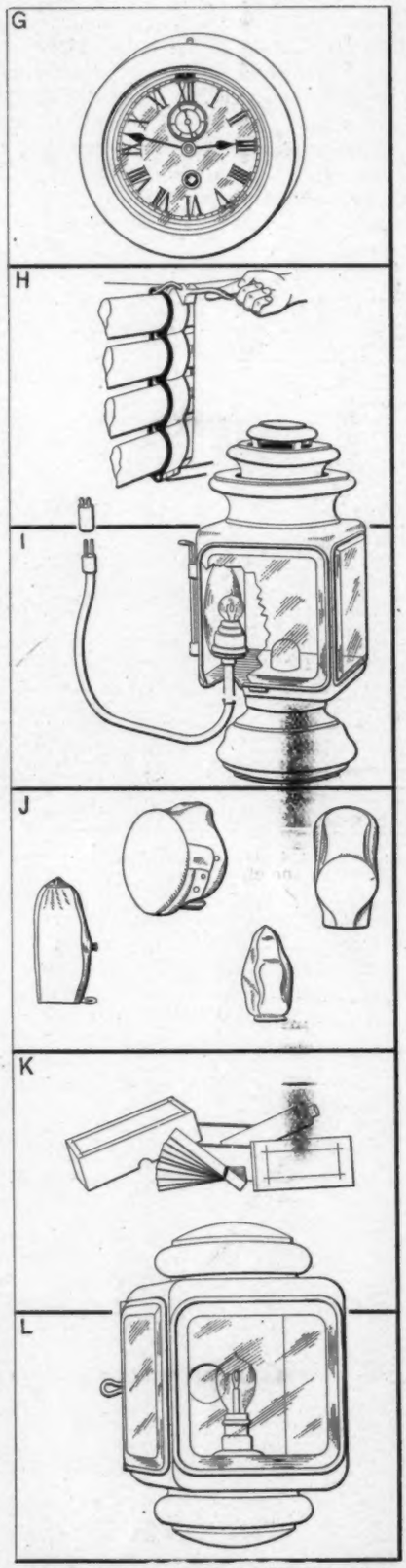
Fig. 4—Battery of Chalmers cars as they will be found in line battling for supremacy in the Glidden Contest

Seen in the Show Window

THE CORRECT "time o' day" is an important element to the automobilist. Watches frequently succumb to the jarrings and moisture inseparable from a long cross-country tour, and a reliable chronometer is therefore a joy forever, even if not a thing of beauty. But the most recent effort of the Chelsea Clock Company, of 16 State street, Boston, Mass., combines utility with attractiveness of appearance. The Chelsea Auto Clock (G) is of the eight-day type, built with a view to stand the jolts and jars of the roughest roads without wavering. It comes in four styles —"Round," "Offset," "Special" and "Limousine," all of which are furnished in 2¾-inch dial diameter, and the first three named in the 3½-inch size. The Chelsea Auto Clock is fitted with the same movement which the company supplies for hard use on locomotives, steam fire engines, etc.

LONG automobile tours without a top to the car are fraught with discomfort and an excess of moisture in many cases, especially if ladies form a portion of the party. But under certain conditions of rough going a top becomes an unmitigated nuisance, what with rattling, broken bows, buckling and numerous other shortcomings. To minimize these troubles the Auto Specialties Mfg. Company, 812 Unity Building, Chicago, has patented the Bair Auto Top Holders (H), a device which will obviate jarring, chafing, jolting, rattling, broken bows and all the minor ills to which the average automobile top is prone, besides doing away with all straps and buckles.

AUXILIARY ignition work, if it is to be relied upon, demands that the battery which is to furnish the electrical energy be of the kind that will remain inactive for even months at a time, and when the critical moment comes it must be ready for instant use. If a storage battery is selected several matters of importance must be considered, among which the question of sulphation is not the least. If a battery is not properly designed and constructed it will self-discharge, and in the process a condition of persistent sulphation will set up, which not only defeats the proper working of the battery at the right time, but it so affects the structure that it will scarcely be worth recharging with a view to future work. In this and many other particulars it was the idea of the Witherbee Igniter Company, Springfield, Mass., to so manufacture its ignition batteries that they will do the very work for which they are intended. A "Witherbee" is here offered as Fig. I; it is a portable six-volt battery of convenient form, which, when it is taken away to be charged, is easy to handle.



G—Chelsea Auto Clock; H—Bair Auto Top Holder; I—Witherbee Igniter; J—Hopewell Lamp Covers; K—Carborundum Compound; L—Castle Electric Lamp.

AUTOMOBILE lamps are a sufficiently expensive accessory to warrant the best of protection for their polished surfaces against the attacks of the weather and the mud and silt of the streets and roads. Careful owners and the manufacturers of accessories have met on common ground in this particular, with the result that many clumsily fitted lamp covers have been evolved which, while they perform their task of protection in a satisfactory manner, are so crude in appearance that they strike a discordant note in the outfitting of many an otherwise perfectly equipped car. To remedy this defect the Hopewell Brothers, of Newton, Mass., have devised and are marketing a line of Perfect-Fitting Lamp Covers (J) of various sizes, made of the best quality of fleece-lined rubber cloth. The Kinder Tire Covers, in enameled duck are also a product of this firm. They are fastened at the end, and with but five buttons.

IN GRINDING down a worn valve an element of primary importance is the possession of a reliable and ready-at-hand grinding compound—one which will cut very fast and very clean and insure a positively true contact seat. The machinist who relies upon his own skill in producing such a mixture often fails to attain the maximum of efficiency, either too much grease or an excess of carborundum powder marring the accuracy of his work. The Carborundum Valve-Grinding Compound (K), made by the Carborundum Company, of Niagara Falls, relieves the machinist of all worry over the preparation of an efficient grinding material. That company puts up its compound in two collapsible tubes, one containing coarse mixture for rough grinding, the other fine mixture for finishing. A package of carborundum cloth strips for cleaning carbonized matter from contact or vibrator points goes with each outfit.

THERE IS something about an electric automobile lamp which appeals to the motorist who desires up-to-the-minute equipment on his high-priced car. There is a market for such a lamp if the danger of short-circuiting be eliminated and the bulb wires so placed as to be easily get-at-able in the event of breakage or needed repairs. Such a lamp has been devised by the Castle Lamp Company, of Amesbury, Mass. It is called the Model 100-E Electric Side Lamp (L), and possesses all the most recent improvements which make for ease and quickness of renewal and repair. The style shown is made of extra-heavy gauge brass, has new-style, extra triple-plated 4¾ × 4¾-inch reflectors of French plate thickness, with a large, red jewel in the rear.